



County Palatine of Chester.

REPORT

OF THE

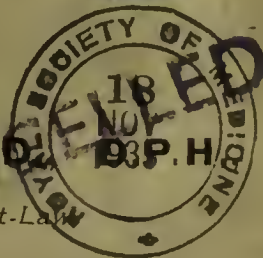
MEDICAL OFFICER OF HEALTH

FOR THE YEAR 1911

BY

MEREDITH YOUNG, M.D.

Of Lincoln's Inn, Barrister-at-Law



PRESENTED TO THE

Public Health & Housing Committee

OF THE COUNTY COUNCIL,

July 12th, 1912.

CHESTER :

PHILLIPSON AND GOLDER, PRINTERS, EASTGATE ROW AND FRODSHAM STREET.





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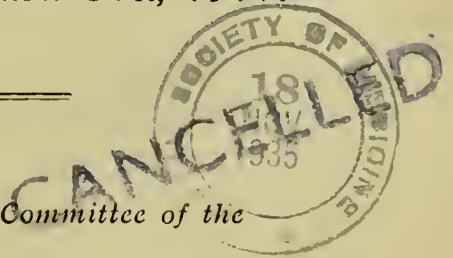
REPORT
OF THE
Medical Officer of Health,

For the Year ending December 31st, 1911.

To the Public Health and Housing Committee of the

County Council of the County Palatine of Chester

and to the Members of the County Council.



PREFATORY NOTE.

CHESTER,

June 29th, 1912.

*To the Chairman and Members of the
Public Health Committee of the
Cheshire County Council.*

MR. CHAIRMAN AND GENTLEMEN,

I have the honour of presenting to you my Report on the health of the Administrative County for the year 1911, together with abstracts from the Reports of the District Medical Officers of Health and comments thereon.

The vital statistics for 1911 are not, I regret to state, quite so favourable as those of the previous year. The birth-rate shews a further decline which, though small, is, taken in conjunction with previous persistent decreases over a long period, full of serious potentialities in my opinion.

The general death-rate has been slightly increased, as have also those components of the general death-rate, viz., the death-rates of infants and the zymotic death-rate, by an exceedingly heavy mortality from diarrhoeal diseases which were both more prevalent and more fatal than in any year of which I have records.

The Administrative County has fortunately remained free from any noteworthy outbreak of any of the more dangerous epidemic diseases though so-called "minor" infectious diseases, such as measles and whooping cough, have been prevalent in a fairly marked degree.

A considerable amount of useful sanitary work has been carried out by the Councils and Officials of the Municipal

Boroughs and Urban and Rural Districts and, though some are a little slower to move than others, I have only exceedingly rarely had to complain of inaction where questions of health were concerned and the officials with whom I have come in contact have accorded me every possible courtesy and kindness.

I regret that I am only able in this Report to give any but the barest information in respect of the Municipal Borough of Macclesfield, for the simple reason that, even at the time when the last sheets of this Report were in the press, nothing but a few tables of figures and half a dozen pages of the statistical portion of the Medical Officer's Annual Report had reached my hands. I am sorry for this because this particular Report always contains valuable matter and I should like to have been able to reproduce some of it.

I have made a few recommendations in the body of the Report, which I have summarised briefly at the end, and I invite your Committee to consider them at some early opportunity.

I desire to thank your Committee for your unvarying kindness to me and for your earnest consideration of the matters I have from time to time placed before you. I may take this opportunity, too, of thanking all with whom I have been officially brought in contact for universal courtesy and kindness. My Clerk has worked with an energy and unselfishness which deserves public mention and I am glad of this opportunity of drawing attention to it.

I have the honour to be,

Mr. Chairman and Gentlemen,

Your obedient servant,

MEREDITH YOUNG

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REPORT OF THE Medical Officer of Health,

For the Year ended December 31st, 1911.

Section I.—Area and Population.

Area.

In the Census Report of 1901 this is given as 645,918 acres, and in the Census Report of 1911 as 644,172. The diminution is due to the extension of the Stockport County Borough boundaries in 1901.

This area is distributed as follows :—

7 Municipal Boroughs	...	...	18,937 acres.
35 other Urban Districts	...	...	80,732 „
12 Rural Districts	...	...	544,503 „
			<hr/>
Total	...	...	644,172 „
			<hr/>

POPULATION, CENSUS.

Population.

At the Census of 1901 this was 599,070, but the extension of the County Borough of Stockport in Nov., 1901, reduced this population to 593,865. At the Census of 1911 the population of the Administrative County was 676,356.

At Midsummer, 1911, the population was estimated to be 679,178, distributed as follows :—

7 Municipal Boroughs ...	...	250,704 persons.
35 other Urban Districts ...	...	244,853 „
12 Rural Districts ...	...	183,621 „
Total ...	...	<u>679,178 „</u>

Census, 1911—Preliminary Figures.

The Preliminary Report of the 1911 Census, which is the only one yet available, shows the following figures for the Administrative County :—

Area in Statute Acres (Land and Inland Water)	644,172
Families or Separate Families ...	150,749
Persons ...	676,356
Males ...	321,806
Females ...	354,550
Increase since 1901 ...	82,471

The figures for the various Districts are as under :—

Municipal Boroughs. (7)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers
	1901.	1911.	Increase.	Decrease.	1911.
Congleton ...	10707	11310	603	—	2665
Crewe ...	42074	44970	2896	—	9955
Dukinfield ...	18929	19426	497	—	4626
Hyde ...	32766	33444	678	—	8019
Macclesfield ...	34624	34804	180	—	8436
Wallasey ...	53579	78514	24935	—	16921
Stalybridge ...	27673	26514	—	1159	6399

Urban Districts. (35)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers, 1911.
	1901.	1911.	Increase.	Decrease.	
Alderley Edge ...	2891	3143	252	—	701
Alsager ...	2597	2743	146	—	640
Altrincham ...	16831	17816	985	—	4107
Ashton-upon-Mersey ...	5563	7236	1673	—	1746
Bollington ...	5245	5225	—	20	1212
Bowdon ...	2788	3044	256	—	665
Bredbury and Romiley	7185	8684	1499	—	2115
Bromborough ...	1891	1974	83	—	403
Buglawton ...	1452	1439	—	13	337
Cheadle and Gatley ...	7916	9914	1998	—	2199
Compstall ...	875	908	33	—	223
Ellesmere Port and Whitby ...	4275	10366	6091	—	1963
Hale ...	4562	8351	3789	—	1945
Handforth ...	911	935	24	—	211
Hazel Grove & Bramhall	7934	9634	1700	—	2268
Higher Bebington ...	1540	1689	149	—	353
Hollingworth ...	2447	2581	134	—	634
Hoole ...	5341	5929	588	—	1224
Hoylake & West Kirby	10911	14029	3118	—	2890
Knutsford ...	5172	5760	588	—	1135
Lower Bebington ...	8398	11412	3014	—	2300
Lymm ...	4707	4989	282	—	1177
Marple ...	5595	6484	889	—	1590
Middlewich ...	4669	4910	241	—	1094
Mottram in Longdendale	3128	3049	—	79	756
Nantwich ...	7722	7816	94	—	1691
Neston and Parkgate ...	4154	4596	442	—	935
Northwich ...	17611	18151	540	—	3831
Runcorn ...	16491	17354	863	—	3767
Sale ...	12088	15046	2958	—	3563
Sandbach ...	5558	5723	165	—	1340
Tarporley ...	2644	2604	—	40	598
Wilmslow ...	7361	8153	792	—	1947
Winsford ...	10382	10772	390	—	2372
Yeardsley-cum-Whaley	1487	1659	172	—	390

CENSUS, 1911.

Rural Districts. (12)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers, 1911.
	1901.	1911.	Increase.	Decrease.	
Bucklow ...	19890	22870	2980	—	4959
Chester ...	10908	12448	1540	—	2381
Congleton ...	12220	12825	605	—	2755
Disley ...	2827	2958	131	—	716
Macclesfield ...	15740	16629	889	—	3659
Malpas ...	4488	4643	155	—	1030
Nantwich ...	23197	24992	1795	—	5458
Northwich ...	22073	23271	1198	—	4983
Runcorn ...	23244	28216	4972	—	6211
Tarvin ...	12614	13187	573	—	2867
Tintwistle ...	2105	2193	88	—	551
Wirral ...	13905	19024	5119	—	3836

Wallasey Borough shows the largest intercensal increase, no less than 24,935; then in order come Ellesmere Port and Whitby, 6,091; Wirral Rural, 5,119; Runcorn Rural, 4,972; Hale Urban, 3,789; Hoylake and West Kirby, 3,118; Lower Bebington, 3,014; Bucklow Rural, 2,980; and Sale Urban, 2,958.

The important part played by the Wirral Peninsula in the total County increase will readily be seen. Wallasey is sixth in the list of 98 towns, the intercensal increase being 46.5 per cent.

The only serious decrease is in the Borough of Stalybridge, where the population was at the census of 1911 1,159 less than in 1901. The other decreases were Mottram (79), Tarporley (40), Bollington (20), and Buglawton (13).

The total population of the Administrative County, inclusive of the 3 County Boroughs (Birkenhead, Chester and Stockport) at the census of 1911 was 954,919, showing an increase of 14.2 per cent. in the intercensal period. This figure places Cheshire thirteenth in the list of Counties.

Density of Population.

This is shewn in the first Table of Statistics given at the end of this Volume. In the 7 Municipal Boroughs it averages 13.23 persons per acre, in the 35 other Urban Districts 3.03

persons per acre, and in the 12 Rural Districts 0.33 persons per acre. Taking the Administrative County as a whole it averages 1.05 persons per acre. The variation is of course considerable in different parts of the County. In Altrincham Urban District it is highest, namely, 26.84 persons per acre, and this figure is closely followed by Wallasey Municipal Borough (23.44), Crewe Municipal Borough (20.62), and Hoole Urban District (17.0). The lowest figures for density of population are found in Tintwistle Rural District (0.16), Macclesfield Rural District (0.20), Malpas Rural District (0.21), and Tarvin Rural District (0.23), whilst several of the other Rural Districts shew figures only very slightly higher.

Tenements.

The proportion of tenements with less than 5 rooms, which averaged 41.0 per cent. of total tenements in the entire Administrative County at the Census of 1901, shewed considerable variations in the larger Urban Districts. The proportion then ranged from 15.0 per cent. in Crewe, and 19.7 per cent. in Wallasey, to 68.6 per cent. in Stalybridge and 71.6 per cent. in Hyde. These figures for the Census of 1911 are not yet available.

Section II.—Births and Deaths.

Births.

There were 15,083 births registered in the Administrative County during 1911, namely, 5,577 in the 7 Municipal Boroughs, 5,608 in the 35 other Urban Districts, and 3,898 in the 12 Rural Districts.

The birth-rate per thousand living in the Administrative County was therefore, 22.2 for the year 1911. In the whole of England and Wales this rate was 24.4 per thousand living, in the Rural Districts of England and Wales 23.4, in the 77 great towns 25.6, and in the 136 smaller towns 23.4. In Cheshire the birth-rate varied from 22.24 in the six Municipal Boroughs to 22.93 in the 35 other Urban Districts, and 21.22 in the 12 Rural Districts. Ellesmere Port and Whitby Urban District shewed an exceptionally high rate of 37.7, and the rate varied in other parts of the County from 30.2 in Lower Bebington Urban District, 28.4 in Middlewich Urban District, and 28.1 in Runcorn Urban District, down to 15.0 in

BIRTHS.

Mottram Urban District, 15.2 in Yeardsley-cum-Whaley Urban District, 16.5 in Alderley Edge Urban District, and 16.6 in Bowdon Urban District.

Speaking generally, the birth-rates were again lower in the better-class residential districts than in the poorer-class districts and in the working parts of manufacturing towns. The following may be taken as examples:—

Better-class Districts.			Birth-Rate.
Alderley Edge	...	...	16.5
Bowdon	...	...	16.6
Hale	...	...	17.5
Hoylake and West Kirby	...	...	17.0
Working-class Districts.			
Ellesmere Port and Whitby U.D.	...	...	37.7
Middlewich U.D.	...	...	28.4
Runcorn U.D.	...	...	28.1
Northwich U.D.	...	...	25.6
Winsford U.D.	...	...	24.9
Dukinfield M.B.	...	...	24.8



It is to be feared that undesirable social causes are responsible for this decline of the birth-rate. The cost of living is bearing most heavily in its increase on the middle classes and they are endeavouring to equalise matters by deliberately restricting the number of children they will have to maintain. This, one feels sure, is the crux of the whole question.

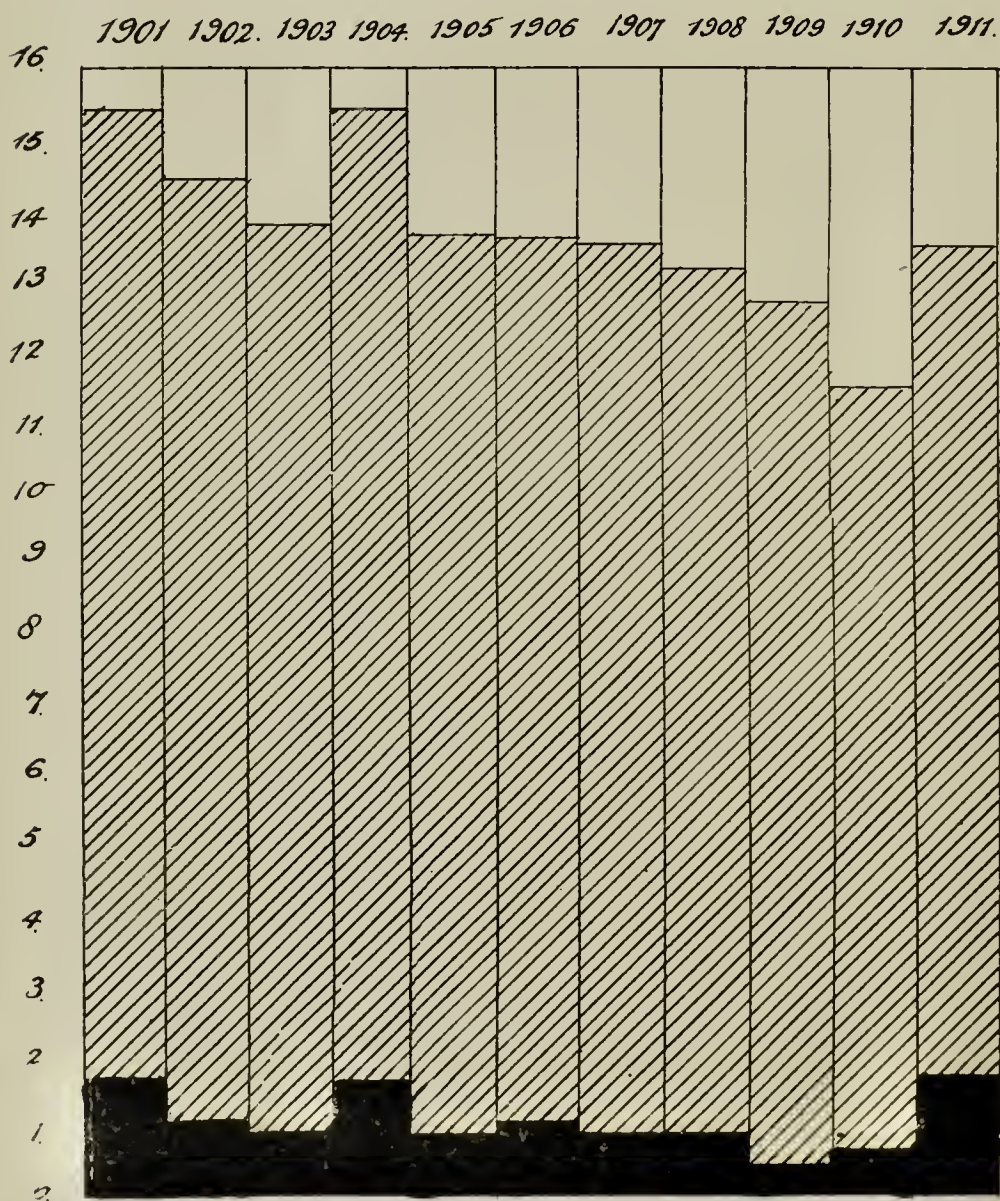
In England and Wales the decline is apparent from the following figures:—

			Birth-Rate per 1000.
1881-1885	...	...	33.5
1886-1890	...	...	31.4
1891-1895	...	...	30.5
1896-1900	...	...	29.3
1901-1905	...	...	28.1
1906 ...	...	...	27.1
1907 ...	...	...	26.3
1908 ...	...	...	26.5
1909 ...	...	...	25.6
1910 ...	...	...	24.8
1911 ...	...	...	24.4

When one considers such figures as these in conjunction with those dealing with emigration one wonders how Great Britain manages to retain her supremacy amongst nations for the number of emigrants from Britain has steadily

GENERAL DEATH RATE (ALL CAUSES) & ZYMOTIC DEATH RATE IN CHESHIRE 1901-1911.

GENERAL DEATH-RATE  ZYMOTIC DEATH RATE 



increased since 1840, being greater in 1910 than it has ever been before (397,848). Moreover it is virtually only the picked lives that are emigrating and, despite the operation of the Aliens Act, one can hardly believe that we are getting in the shape of immigrants the best of the population of other countries but in a large measure the worst.

Deaths.

The total number of deaths during 1911 in the Administrative County numbered 9,339, namely, 3,854 in the 7 Municipal Boroughs, 3,312 in the 35 other Urban Districts, and 2,173 in the 12 Rural Districts. The death-rate for the County, as a whole, was 13.75 per thousand living. The comparative figures for the rest of the country were:—

England and Wales ..	...	14.6
77 Great Towns ...	...	16.4
136 Smaller Towns ...	...	14.4
Rural Districts ...	...	13.1

In the 7 Municipal Boroughs of Cheshire taken together the death-rate was 15.37 in the 35 other Urban Districts 13.52, and in the 12 Rural Districts 11.8.

The death-rates varied considerably in the different districts. The highest rates are recorded in the following districts:—

Handforth U.D. ...	...	22.4
Stalybridge M.B. ...	...	18.9
Hyde M.B. ...	...	18.8
Sandbach U.D. ...	...	18.3

The lowest rates are recorded in the following districts:—

Higher Bebington U.D. ...	...	6.5
Compstall U.D. ...	...	7.7
Alderley Edge U.D. ...	...	8.2
Wirral R.D. ...	...	10.0
Chester R.D. ...	...	10.0
Lower Bebington U.D. ...	...	10.5
Hale U.D. ...	...	10.5
Malpas R.D. ...	...	10.6
Hoyle and West Kirby U.D. ...	...	10.9
Bromborough U.D. ...	...	11.1
Hoole U.D. ...	...	11.1
Congleton R.D. ...	...	11.2
Bucklow R.D. ...	...	11.7

INFANTILE MORTALITY.

The death-rate for the Administrative County in 1911 was higher than in 1910, 1909, 1908 or 1907, but in spite of this affords some reason for congratulation, as a glance at the death-rates for the previous ten years will show.

DEATH-RATES PER 1,000 LIVING.

Year.		Cheshire.		England and Wales.
1911	...	13.75	...	14.6
1910	...	11.75	...	13.4
1909	...	12.7	...	14.5
1908	..	13.1	...	14.7
1907	...	13.6	...	15.0
1906	...	13.7	...	15.4
1905	...	13.8	...	15.2
1904	...	15.7	...	16.2
1903	...	14.1	...	15.4
1902	...	14.6	...	16.2
1901	...	15.6	...	16.9

The high zymotic mortality, caused to some extent by the long drought, is chiefly responsible for this increase in the death-rate. This is reflected again in the high infantile mortality rate which receives allusion later.

Measles has caused about two-thirds more deaths than was the case in 1910, and whooping-cough has a record very similar to that of 1910. But diarrhoeal diseases present the enormous total of 779 deaths in 1911 as compared with 94 in 1910. Diphtheria shews a slightly less mortality as does also scarlet fever, and enteric fever deaths were markedly less during 1911.

Infantile Mortality.

The Local Government Board in their Memorandum on the preparation of Annual Reports by Medical Officers of Health, lay special stress on certain information which they desire should be given in the section relating to infantile mortality. Certain paragraphs from this Memorandum are quoted as in previous years in the hope that they may attract the attention of those Medical Officers who probably may not have noticed them elsewhere. I have italicised some of those paragraphs as relating to matters which have not, in my opinion, received adequate comment in many of the Reports with which I have been furnished.* It is not possible, in the absence of such information, for such a complete statement of

this highly important question to be presented for the County as a whole as one would wish to give and one trusts that the little labour necessary will not be grudged in the future Reports of Medical Officers of Health.

"This section of the report should treat of each disease in turn; and it will be convenient in the same connection to describe the administrative action taken. Thus the administration of the Midwives Act may with advantage be considered in relation to puerperal fever and of the Notification of Births Act, 1907, in relation to infant mortality.

"If the last named Act has been adopted, the Medical Officer of Health should report fully in his annual report on the measures taken by assistance of the Act in repression of infant mortality, and on the observed effect of such measures.

"Table IV. issued by the Board affords opportunity for record in detail of facts as to infant mortality. It is well known that in many parts of this country the infantile death-rate remains unduly high; that it differs widely in districts the circumstances of which are not definitely dissimilar; *and that within the limits of a given sanitary area this death-rate may exhibit striking diversities.* Not a few Medical Officers of Health, in their annual reports—more particularly in reports of recent years—have dealt in detail with this subject, thus making important contributions to a better understanding of the conditions which conduce to infant mortality. Nevertheless, statistics available in this connection do not afford, except in a broad and general way, satisfactory basis for comparison of district with district, nor, indeed, always for useful contrast of different sections of the same district.

"In the text of his annual report, the Medical Officer of Health will, no doubt, comment on the facts that he has recorded in his table or tables, offering, at the same time, observations on the conditions which, in his view, have mainly contributed to any special infant mortalities witnessed, and giving account of any measures adopted to ameliorate those conditions regarded by him as especially hostile to infant life. In so far as modification of procedure for the purpose, or of law in facilitating such modification, is in his opinion necessary, the Medical Officer of Health is invited to state his views."

"It is not proposed that report on the above lines be limited to districts exhibiting unduly high infantile death-rates. Data are desirable respecting districts low in the scale of infant mortality, with comment by the Medical Officer of

INFANTILE MORTALITY.

Health on the facts that he is recording, and indication of the conditions which, in his view, have principally conduced in his district to comparatively insignificant infantile death-rate."

Taking the Administrative County as a whole, the deaths of infants under one year of age numbered 1,836, equal to a rate per thousand registered births of 121.0. In England and Wales the comparative figure was 130, in the 77 great towns 140, in the 136 smaller towns 133, and in the Rural Districts 118. The figure for the Administrative County of Cheshire is thus a distinctly favourable one. But there are lights and shades in the picture, as may be seen from the fact that in the six Municipal Boroughs of Cheshire the rates recorded averaged 154, as compared with 118 in the 36 other Urban Districts, and 79 in the 12 Rural Districts.

In the following districts infantile mortality ruled high:—

Dukinfield M.B.	...	...	206
Middlewich U.D.	...	...	204
Congleton M.B.	...	...	195
Hyde M.B.	...	...	189
Hollingworth U.D.	...	...	189
Northwich U.D.	...	..	180
Buglawton U.D.	...	..	178
Altrincham U.D.	...	...	173
Stalybridge M.B.	...	...	172
Sandbach U.D.	...	...	166
Nantwich U.D.	...	...	165
Crewe M.B.	...	...	162

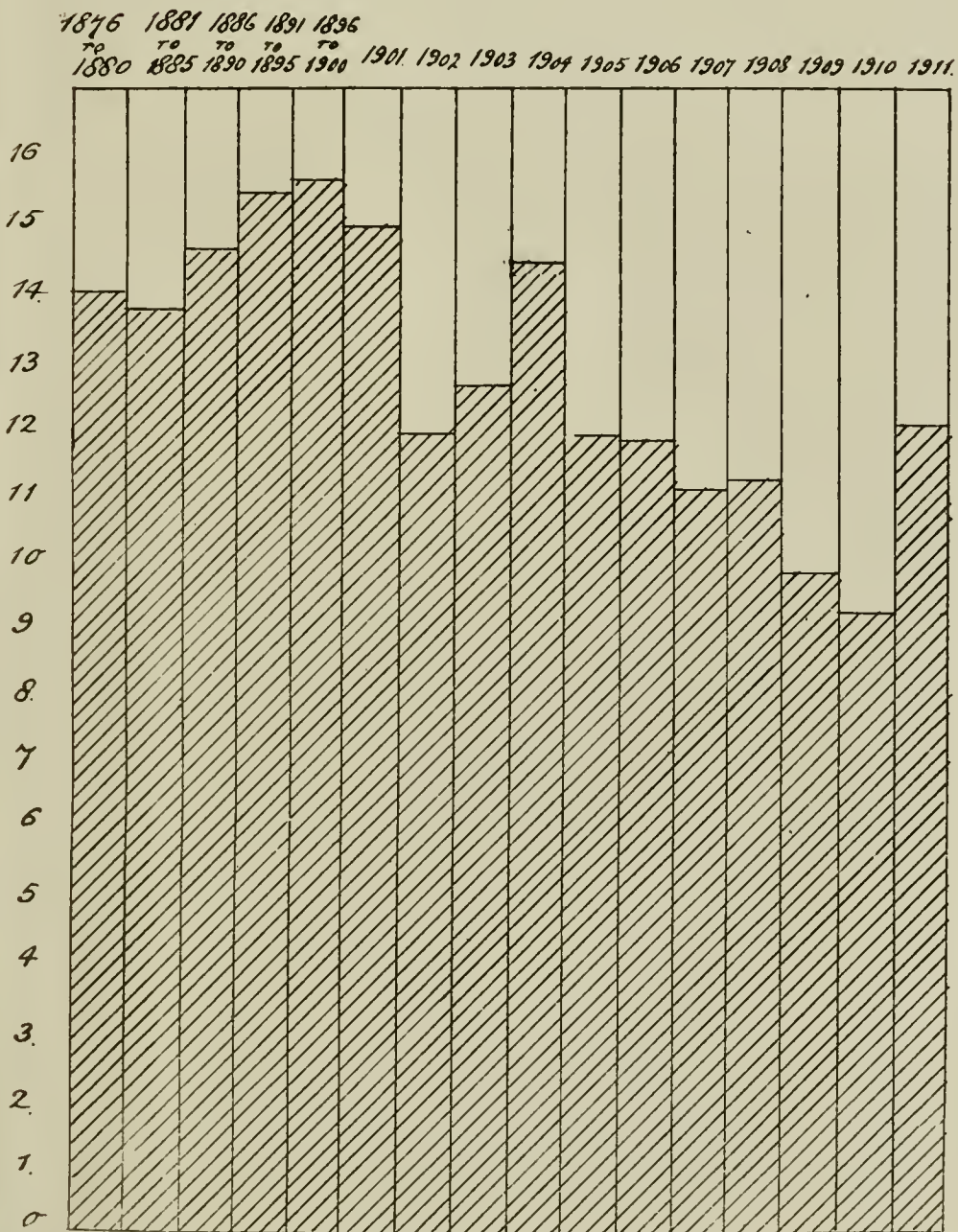
In the undermentioned districts the rates have been very low ones:—

Compstall U.D.	...	...	Nil.
Runcorn R.D.	...	.	22
Disley R.D.	...	...	36
Lymm ...	...	...	36
Handforth	.	...	50

Some of the above figures, relating to both high and low mortality rates are no doubt accidental and are due to the smallness of the statistics concerned. A consideration of the statistics over a period of 5 or 10 years would shew different

INFANTILE MORTALITY IN CHESHIRE.

FROM 1876 TO PRESENT DATE.





results, and I should be grateful if Medical Officers of Health of small areas would in subsequent Reports present important statistics in this form. On the other hand there may be, in some of the districts of low infantile mortality, factors concerned which, properly investigated and recorded, would throw useful light on some of the problems associated with this interesting question.

There is a decrease in the recorded mortality from such vague and indefinite headings as debility, atrophy, marasmus and convulsions indicating a gratifying transference to more accurately diagnosed causes.

As is to be expected the infantile mortality rate in the 7 Municipal Boroughs was considerably higher than the Urban and Rural Districts, namely, 154 per thousand registered births, as compared with 118 and 79 respectively. In Dukinfield and Congleton Boroughs the high rates of 206 and 195 were recorded, whilst in Hyde and Stalybridge the corresponding rates were 189 and 172 respectively. The extraordinary rate of 204 per thousand registered births in Middlewich Urban District is the result of working on small figures as there were only 29 deaths of infants under one year of age but only 142 births registered.

The height of this figure has undoubtedly been due to the extraordinary drought and heat which prevailed. It is believed that 1911 was the driest year for about a century, and as drought is one of the chief meteorological factors favouring death from infantile diseases of the gastro-intestinal type, it was only to be anticipated that the mortality amongst infants would rule high. This slight temporary rise in infantile mortality need not, however, cause us to lose confidence for a moment in the real, and it is hoped, permanent reduction which is taking place. The measures pursued by enlightened Local Authorities are slowly but surely having their effect on the incidence and fatality of infantile diseases, and if all Authorities in whose districts infantile mortality exceeded a rate of 100 per 1000 registered births were to set themselves seriously to work to reduce that mortality it would not be many years before they achieved results which would well repay them. The results attained since the arrival of the Early Notification of Births Act and the employment of Female Health Visitors are most noteworthy. In other words when ignorance has been dispelled and accurate knowledge instilled in its place the work of reducing infant mortality is already three quarters done.

INFANTILE MORTALITY.

The maternity benefit of the National Insurance Act when it comes into operation will be another material help in combating infant mortality. But here as in dealing with every kind of preventible illness, we must rely on no one particular method but utilise to the full every single means available in the organization of a campaign against the disease we are fighting. The first and most essential measure to adopt is undoubtedly the employment of educated women to diffuse knowledge on hygiene of the home including sanitation, domestic and personal cleanliness, proper feeding methods, the protection of food from contamination, &c. It is this measure which many Local Authorities, otherwise distinctly progressive, fail to carry out. If they would do it for an experimental period of one year only I am quite convinced that they would continue it with enthusiasm. But there are many illdefined false ideas floating about still in the minds of some Local Authorities on this question. They have an idea that mothers will not listen to advice tendered by a young and possibly unmarried woman: that people will resent having their homes visited and suggestions offered for their improvement: that there will not be enough work in their district for the Health Visitor to do: that people will resent the employment of another "Inspector" to come "fussing round" their premises: and so on. These are all objections with which I have had to contend personally and this too in a town which was one of the first in England to utilise educated women in the work of controlling infantile mortality. The objections vanished so completely that in the course of a couple of years a second Health Visitor was appointed in this town. The policy of this Town Council was vindicated almost from its first inception. The Health Visitors were received somewhat doubtfully at first, but when their mission came to be known they were written down as the friends of the poor and they became as sacred as priests, even in the vilest slums of the town.

I have never yet heard of a Local Authority employing a Health Visitor and subsequently discontinuing such employment. I urge their employment most strongly in every Municipal Borough which has not up to the present secured the services of one, and I hope that smaller Local Authorities where infant mortality runs high will enlist the services of a District Nurse for this purpose. I prophesy that once this is done there will be no occasion for regretting the action but quite the reverse.

The employment of qualified or adequately trained ladies for the visitation of newly-born infants, especially in the case of births occurring amongst working class persons, has proved a notable success not merely as

affecting the infant lives, but also as, in the majority of cases, securing better hygienic surroundings for the whole of the family. This provision for lessening infant mortality should be now adopted in every Municipal Borough and large Urban working-class district, and in these areas the Notification of Births Act should be at the same time put into operation. Your Committee urged the advisability of adoption of these measures on certain Councils during the year but only a few of them have so far responded favourably.

Coincidentally with this efforts should be studiously maintained towards an improvement of home environment and in particular to abolition of privy-middens and open ash-pits, proper paving of back-yards and passages, frequent and regular removal of refuse from the vicinity of dwellings and stringent regulation of the milk-supply. The importance of persistent work in these matters is most strongly urged as conducive *not merely to a reduction of infant mortality but as ensuring freedom from many other diseases which are costly both to the Local Authority and to the individual.*

The following Table shews for the Administrative County of Cheshire and England and Wales the infantile mortality rates for the past ten years:—

Year.	Cheshire.	England & Wales.	Year.	Cheshire.	England & Wales.
1911	121	130	1906	118	132
1910	93	106	1905	119	128
1909	99	109	1904	144	145
1908	113	121	1903	126	132
1907	112	118	1902	119	133

It is thus apparent that though the rate for 1911 is higher than it has been for some years it has remained for a long time below the rate for the country as a whole.

The Seventy-second Annual Report of the Registrar-General which is the latest one available at present gives information relating to the infantile mortality since the year 1876, and the following figures taken from that Report may be of interest.

The infantile death-rates in Cheshire have been as follows as compared with those for England and Wales as a whole:—

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Period.	Cheshire Infantile Mortality Rate.	England & Wales Infantile Mortality Rate.
1876-1880	.. 140	... 145
1881-1885	... 137	.. 139
1886-1890	... 146	... 145
1891-1895	... 155	... 151
1896-1900	... 157	... 156
1901-1905	... 138	... 138

The infantile mortality in the Municipal Borough of Congleton was 195 per thousand births—an exceedingly high figure and in fact the third highest in the whole County. The Borough Council should inquire carefully into the possibilities of the reduction of this mortality.

The Health Committee of the Borough of Crewe in 1908 had under consideration the question of adopting the Notification of Births Act, 1907. Owing, however, to the fact that no provision existed for visiting any cases which might be notified, it was decided not to adopt the Act for the present. The Committee agreed to the suggestion that a supply of cards of instruction on Infant Feeding should be given to each midwife in the Borough for distribution to her patients. In 1911 the Health Committee again discussed the advisability of adopting this Act and a scheme was submitted whereby the difficulty with regard to a Lady Health Visitor might be overcome by a joint appointment. Negotiations in connection with this scheme have, however, been diverted from their original channel by the possibilities of combining the appointment of a Health Visitor with that of a Nurse to visit Phthisis cases under the National Insurance Act.

In Dukinfield Municipal Borough it is reported that:—

“Special treatment in the way of feeding young children by means of sterilized modified milk has in past years been adopted in order to reduce the mortality. For each monthly meeting a special report is prepared as the result of enquiries relative to the deaths of infants under twelve months. It is difficult to explain the high infantile mortality in these manufacturing districts, and as yet I know of no definite cause as the result of these statistics.”

In Hyde Municipal Borough it is stated that:—

“The infant mortality rate has not been so high since 1905. The high rate is accounted for by the serious epidemic

of diarrhœa, which caused the deaths of 37 children under one year old. The epidemic was due to the prolonged dry and hot weather during the summer and early autumn months.

“Special measures were taken to combat the epidemic as far as possible. The Sanitary Inspectors paid special attention to the cleaning of passages and back premises in the more crowded districts, and a leaflet was printed and distributed to every house in the Borough.”

In the Macclesfield Municipal Borough the infantile death-rate is 151 per thousand births, a higher figure than has been recorded for some time. The Births Notification Act came into force on April 1st, 1909, and cases notified are visited by Health Visitors.

The Medical Officer of Health for the Borough of Stalybridge reports that:—

“There has been a distinct improvement in the infantile mortality during the past three years and had it not been for the brief epidemic of diarrhœa following the hot dry summer the present year’s record would have been exceptionally good. The improvement in the mortality of infants is probably in part due to steadily improving sanitary conditions but may largely be attributed to the efforts of Miss Hanson, our Lady Sanitary Inspector.

“Miss Hanson commenced her duties in February, 1908, and the Notification of Births Act, 1907, came into force in our Borough on March 1st, 1908. The Act has met with a very ready response, both from the general public and from the midwives, and there have occurred very few births indeed which were not notified to me in accordance with its provisions. Information regarding these omissions was kindly given me by Mr. Flint, the Registrar of Births and Deaths, and upon enquiry I invariably found the reason was ignorance of the Act, and not neglect of it, upon the part of the parents, though they might reasonably have been reminded of their duty by the medical practitioner in attendance. Up to the present time such omissions to notify the birth have been met with a caution, and I trust that in future there will be no necessity to institute further proceedings.

“Very shortly after a birth has been notified Miss Hanson visits the home, gives advice *re* the feeding and management of the infant, notes any defects or insanitary conditions in or about the premises, and reports thereon. Visits are again

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paid to these homes when the infants attain the age of three, six, and nine months, and reports are again made, while additional visits are paid whenever it is thought advisable.

"During the year she has paid 2,579 visits *re* births, and 1,173 occasional visits.

"When diarrhœa began to be prevalent in the summer she distributed in the course of her visits a special leaflet I issued dealing with "Epidemic Diarrhœa of Infants," and also gave much valuable advice.

"Besides visiting the newly-born infants she also investigates all cases of deaths of infants under one year of age, and in this connection she has inquired into the deaths of 95 infants. Of these she ascertained that 11 had never partaken of any food, 19 had been entirely breast-fed, and 65 had been artificially fed.

"Her observations lead her to believe that breast-feeding is being more systematically and more persistently followed out than was the case during the earlier portion of her round of visits, and that in case of serious disease, medical advice is more promptly obtained."

Commenting on the causes of infantile and child mortality Dr. J. H. Marsh (Macclesfield) states:—

"The increased mortality during the first and second quarters of the year, was due to the epidemic of whooping-cough and its appendical pneumonia and bronchitis. The higher figures in the third quarter, represents the diarrhœal deaths, associated with the hot summer.

"An epidemic of whooping-cough or measles during the first quarter of the year has usually a much higher mortality-rate than one occurring during the fourth quarter, when very frequently the weather is mild and open and the cold easterly winds of spring do not predispose to pulmonary complications.

"Again, I think the children are harder and better nourished and more able to resist disease after the fresh air and sunshine of the summer time, than when attacked in the early spring after the winter's cold, and privation, and the foetid atmospheres of ill-ventilated houses.

"In the case of those infants and children who have suffered from diarrhœa and "bowel complaint" during a hot

summer, the converse of the first part of the above statement is true, that is, they are left so weak and debilitated as to readily fall victims to bronchial diseases with the first snap of really cold, damp weather. This is usually heralded by a few days of foggy weather. The old saw that "a green winter makes a fat church-yard" is a hoary "terminological inexactitude." Exactly the opposite is the case. A mild winter, free from fog is the best preventive of lung diseases which are the cause of the largest amount of sickness and death in the winter months in England."

In Wallasey Municipal Borough the infantile mortality rate is 109 per thousand births. Dr. Barlow has some very pertinent remarks to make on this important subject which I reproduce almost in full:—

"The year just passed affords us an opportunity of considering whether the measures for preventing the excessive wastage of child life, which have formed such a prominent feature in public health administration during the last few years, have had their due effect. It is an exceedingly difficult matter to assign any definite improvement in the public health as being due to any definite cause. For example, great efforts have been made during the past few years by public health authorities to educate the mothers in the proper feeding and care of children. Health visitors have been appointed to pay visits to the homes of the people for this purpose, and also to interest themselves generally in the welfare of the family, particularly of the babies, and not only so, but to arouse more interest in their own children among the parents themselves in a certain class of the people in which that interest is distinctly lacking. The results year by year have been eminently satisfactory, but the meteorological conditions of the summers during the past few years have also been favourable to a low mortality in that they have been cool, the air, streets, and sewers have frequently been washed with plentiful downpours of rain, foodstuffs have not been so liable to decompose, the flies have not been so numerous, and consequently their work in the direction of depositing infected material on foodstuffs has been distinctly less. The question, therefore, has always arisen: How much of the improvement has been due to the efforts of the health staff and how much to conditions over which we have no control? Personally, I have always been very confident that the greater part of the improvement was due to human efforts, because the last few years have not been the only years in which the conditions have been favourable for a low mortality, and yet in previous favourable years the mortality has been much

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higher. There was never a summer in which the meteorological conditions were more unfavourable for preventing diarrhoeal diseases than last summer. It was difficult in the best houses under the best conditions to keep foodstuffs sweet. It must have been ten times more difficult, therefore, to keep foodstuffs sweet in houses where the conditions operating against its accomplishment were so many and so powerful. Long periods of drought were common, with the result that the water seals in street gullies evaporated, allowing emanations from sewers, which badly wanted flushing, to pollute the atmosphere. Flies were numerous. The result of all these causes has been an increase in the diarrhoeal deaths, which largely accounts for the rise in the infant mortality rate, but the present rate of 109 compares very favourably, for instance, with the infant mortality rate of 157 in the year 1904, 142 in 1901, 132 in 1900, and 163 in 1889, although the summers of those years were neither so long, so hot, nor so dry as was last summer.

“Reviewing the whole situation, it would seem to be proved without any doubt that the policy of sanitary authorities has been amply justified, and that the result of the efforts made has been the saving of hundreds of young lives.

“Before examining in detail the causes of infant mortality and the localities in which it was highest, I should like to draw attention to a paper by two German scientists, in which they discussed very fully the causes of infant mortality in relation to the heat of summer in Berlin, and some other large towns, such as New York and Munich. In that paper they state that a direct effect on infant mortality is caused by heat, quite apart from any effects on the decomposition of food, and, as a consequence, of infection through the alimentary canal. They set out the reasons for their views, and have tabulated the daily mortality of infants for several years, together with the thermometric records, which show a simple parallelism in the two curves—so remarkable a parallelism, indeed, as the reviewers state: “It is difficult to avoid the conclusions at which the authors arrive, that there must be some very close connection between heat and mortality.”

“If this be so, the heat of last summer may in itself have been a factor of some importance in raising the infant mortality rate throughout the country.

“During the year the Notification of Births Act was adopted and a second Lady Inspector appointed with special qualifications to carry out the inspections under that Act. The appointment of

the second Inspector was rendered necessary owing to the large increase in the scope of the work allotted to the Senior Inspector. The Senior Inspector is now kept occupied mainly in keeping under observation and making enquiries into the cases of phthisis notified and visiting infectious diseases notified from the schools, while the second is entirely employed in work connected with the Notification of Births Act.

“Perhaps it may be well to set out at this point the special measures which are taken in Wallasey for the prevention of excessive infant mortality.

“(1). Visits are paid to the houses where births have occurred. Breast feeding is encouraged and where this is impossible verbal instruction as to the feeding of children is given and practical instruction where necessary, while leaflets giving further information are left at the houses. In houses where unsatisfactory conditions are found repeated visits are made. This may be termed routine work.

“(2). During the summer a special flushing gang is deputed to regularly flush back passages, so that there should be no accumulation of offensive material on the surfaces, since, in the poorer parts of the district, the back passages are often the favourite playgrounds of the children.

“(3). More frequent emptying of ashpits during the summer months is carried out.

“(4). The weekly removal of manure from midden-steads is rigorously insisted on, with the idea of thereby removing the breeding places of flies and limiting their number.

“(5). Arrangements were also made last summer by which the Doctor of the Dispensary notified me of the cases of diarrhœa coming under his notice. These were visited by one of the Lady Inspectors and the parents were assisted in carrying out the instructions of the Doctor; moreover, the Inspectors being in close touch with charitable organizations, the parents were often assisted in various other ways.

“One of the points on which parents are instructed is the necessity for the proper storage of food. In the poorer parts of the district one repeatedly finds that the remains of one meal are left on the kitchen table from morning till night and are never removed, with the result that flies swarm in the apartment. At the same time, it should be pointed out that the provision for

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storing food, not only in the older houses, but in the absolutely new houses, is most inadequate and unsuitable.

"In 99 cases out of 100 in houses of the smaller type, the only provision for the storage of food is a cupboard at the side of the fireplace, a most unsuitable place for food in the summer time as regards position; and, moreover, many of the shelves are placed so high that it is an absolute impossibility to make use of them without the use of a stepladder. In my opinion it is most important that the provision of suitable accommodation should be compulsory in every house and a house should not be certified as fit for habitation until suitable storage is provided. I am convinced that the lack of storage accommodation is a factor of considerable importance to be considered in relation to the causation of intestinal diseases among children.

"It is useless to tell people to take care of their food and prevent flies alighting on it when the accommodation provided for that purpose is worse than useless.

"There is another point in connection with infant mortality to which I would like to draw attention and that is the system which prevails in England of boarding out children. It is notorious that the loss of life amongst illegitimate children is much greater than it should be. Large numbers of illegitimate children are boarded out and often they are boarded out by Boards of Guardians. It is astonishing to find when children are so boarded out what few qualifications are insisted upon as regards the foster mothers. Provided the house is clean, no other qualification seems to be necessary and, since all these infants of tender years must necessarily be artificially fed, it would appear obvious to most people that the person taking charge of them should be required to have some knowledge of how to feed a child deprived of its natural food, *i.e.*, its mother's milk. This is by no means always the case and to my knowledge children are often boarded out with people of the "granny" type, who reply to all one's advice by saying: "Well, I gave my children biscuit and pobs at the age of one month and no harm came to them." In my experience no person having the care of children is so potentially dangerous as the ignorant "granny." I would suggest that the German method of caring for very young children in institutions is a much better plan. Boarding out, when feeding is of no material consequence, can be carried out later. I suggest that the boarding out with ignorant people of very young children is not the best way for safeguarding the lives of those children.

"Enquiries into all deaths have again brought out how important it is that mothers should naturally feed their children.

Year by year one repeats this, and year by year one finds it necessary to repeat it.

“Inquiries instituted in 1908 as to the causes and circumstances attending the deaths of children under one year have been continued in 1911. 1,165 births were visited. At the time of the first visit 83 per cent. were fed entirely on the breast; 7 per cent. were bottle-fed, 7 per cent. on breast and bottle. Of the deaths of children under one year (190 in number), 23 were breast-fed, 102 were bottle-fed, 24 were fed on breast and bottle, 11 were not fed at all, and particulars were not ascertained with regard to 30 of the deaths. It will thus be seen that although 12 times more children are breast-fed than are bottle-fed on the occasion of the first visit, the number of deaths of bottle-fed children is nearly five times as great as those entirely breast-fed. These figures are most striking. If it is necessary to offer any inducement to mothers anxious for the welfare of their children to feed them from the breast where possible, these figures ought to supply that inducement.”

In Altrincham there were 71 deaths of infants recorded, 26 of these being due to diarrrhœal diseases: the rate of mortality was 173 per thousand births—surely much too high a figure for an area of this character.

In the Higher Bebington District only two infants died under one year of age.

In Bollington Urban District the rate of infant mortality was 155 per 1,000 births (16 deaths under one year of age as compared with 104 births). Dr. Main's remarks are apposite on this matter:—

“What can be done in the way of preventing the wastage of valuable infantile life? The Seasons and their climatic variations cannot be affected, but it is imperative that every endeavour should be used to influence their effects on the mother and the child especially where possible through their environment.

“So far as it is possible everything which tends to the premature birth of the child should be prevented. No expectant mother should be allowed to continue at work in the mill right up to the time of her confinement. It is pleasing to be able to report that the managers and heads of the various mills in the neighbourhood sympathise with this, and so far as they have knowledge of such cases, do not allow it, nor are mothers permitted to return to their work for at least one month after the birth of the child. The

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suggestion of your Committee to this effect, made some years ago to the mill authorities, has been loyally carried out.

“As to the case of the child after birth, the midwives give every help possible in the way of advice as to clothing and feeding. At every house where they have been in attendance they leave cards with instructions as to feeding, clothing, and the general care of the infant. The use of the boat-shaped bottle and the ill effects of the old-fashioned tube bottle are strongly impressed on the mothers. In this respect one is glad to note that there is a change slowly coming over the people, but unfortunately the old-shaped bottle still holds its sway in the great majority of cases. It is quite impossible to thoroughly cleanse these bottles and their indiarubber tubes. No matter how much one is told that the brush is passed through the tube they always smell sour after use. The only result is that the fresh supply of milk is contaminated before the child takes it. This tube and the ‘dummy’ are the causes of a great deal of infantile suffering, to say the very least of it.

“How frequently one sees a ‘dummy’ picked up off a floor—not always passably clean—and put straight away or *via* the sugar bowl, into the child’s mouth. One cannot imagine the mothers taking anything off the floor and putting it in their own mouths; then why should they give such an uncleanly thing to their baby to suck?

“So much the employers and the midwives do—what further can be done by the sanitary authority? Theirs is the duty to see that the environment of the home is made as healthy as possible. Your Committee has, during the past year, rigorously insisted that all windows should be made to open, thus securing the possibility of better ventilation. Furthermore, a large number of water-closets have been substituted for the old fashioned privy-middens. Unfortunately a large number of these still abound, and, where they do, in a season like the past, with long continued, hot, dry weather the danger is greatly increased. One can only continue to urge on the conversion of this system to the newer and better water-carriage system, until the time will come when the whole district is supplied with the water-closet and dry ashpit. For this, a pretty round supply of water will be required.”

In the Bredbury and Romiley District, where the infantile death-rate is 80 per thousand, books of instructions on infant feeding are distributed *gratis*.

In the Ellesmere Port and Whitby District there was a considerable increase in the infantile death-rate during 1911

when it mounted up to 153, that for 1910 being only 80 per thousand births, as compared with 140 for the previous year. It is sincerely to be hoped that the Council of this Urban District will see the wisdom of adopting the Births Notification Act.

In the Hollingworth District the infantile death-rate is given as 189 per thousand births. This is an excessive mortality and unusual for this district. Dr. Pomfret attributes several of the deaths to the mothers returning to work too soon and putting their children out to nurse.

Marple Urban District presents a departure from its usually low infantile death-rate, that for 1911 being 162 per thousand births. Dr. Burton attributes the usually low rate to the greater care now taken by the mothers in feeding and the continued good work of health visitors. The usual absence of intestinal disorders, in his opinion, shows this plainly, though the conditions in 1911 were extremely trying in this respect.

The rate in the Middlewich Urban District, 204 per thousand births is probably the highest on record. The improvement of recent years is doubtless due to the energetic educational work of the lady health visitor.

In the Mottram Urban District, the rate is 130 per thousand births. Dr. Awburn speaks highly to the increased care shown by the mothers in feeding and states that the long rubber-tubed feeding bottle is seldom seen in the district.

In Nantwich Urban District, the infantile mortality is again high, 165 per thousand births, despite the good work of the district nurse, who visits all the children born amongst the working classes. This is a matter for serious consideration by the District Council.

There was a distinct increase during 1911 in the infantile death-rate at Neston and Parkgate, the rate for that year being 132 per thousand births. Dr. Yeoman attributes the usual low rate to the energetic efforts of the district nurse.

Notification of Births Act.

This Act has so far been adopted by the following Local Authorities :—

NOTIFICATION OF BIRTHS ACT.

Macclesfield Municipal Borough.		
Stalybridge	„	„
Wallasey	„	„
Lower Bebington Urban District.		
Bowdon	„	„
Bromborough	„	„
Knutsford	„	„
Lymm	„	„
Middlewich	„	„
Nantwich	„	„

Dr. Yeoman states that the Lower Bebington Urban District Council have decided to adopt the Notification of Births Act, and have taken the necessary preliminary steps in connection with this Act.

Reporting on this matter in the Urban District of Ellesmere Port and Whitby, Dr. Yeoman states :—

“Your Council had under consideration the adoption of the Notification of Births’ Acts, after the receipt of a letter on this subject from the Clerk to the County Council arising out of a report of the County Medical Officer. The conclusion you arrived at was that at the present time you would not adopt this Act. I am of opinion that this was a wise conclusion unless you were prepared to appoint the necessary machinery for the working of the Act. In view of last year’s infantile mortality when 61 children died before attaining the age of one year, a rate equal to 153 per 1,000 children born, I hope that this Act may soon come up for further discussion, that it may be adopted and a Health Visitor appointed to carry out its provisions.”

In Handforth Urban District the infantile mortality was 50 per thousand registered births. Dr. A. Nowell writes :—

“I think the low infantile mortality in this district is due to the fact that practically none of the mothers put the infants out to nurse whilst they work themselves. In this district there are no visiting and supervision of the mothers and children. The district also seems a healthy one for infants in other ways ; there are comparatively little measles or whooping cough and in the exceptionally hot summer of last year though there was a good deal of epidemic diarrhoea this was mainly among adults, very few children suffering.”

Writing of Hoole Urban District, Dr. Butt reports that :—

“The Notification of Births Act, 1907, has not been adopted in this district. Great vigilance was exercised by the Sanitary

Inspector and the men working under him during the hot weather in the removal of house, stable and other refuse, which vigilance was a powerful influence in preventing any outbreak of zymotic diarrhœa. There were remarkably few cases of that disease and no death was certified as due to it."

Dr. Garstang has initiated at Knutsford an excellent system of visitation by a part-time nurse which might be imitated with advantage elsewhere. He reports :—

"The work of visiting and advising mothers of new-born infants has been steadily carried out during the year. 128 cards were received (6 outside the district), 5 still-births, 8 deaths, 5 removals, 812 visits paid. Nurse Johnstone reports that the mothers appreciate her visits and the advice given as to feeding, clothing, &c. Breast-feeding is encouraged and, where this is impossible, the bottle-feeding is carefully supervised. Ignoring four deaths from whooping-cough, the figures are satisfactory."

Dr. Garstang initiated this same system at Middlewich and the present Medical Officer of Health reports :—

"The Notification of Births Act has been in force for two years. The lady Health Visitor has paid numerous visits and instructed the mothers in the care and feeding of their infants, especially during the very hot weather, advising them to purchase their milk in small quantities and sterilize it by boiling."

Mottram-in-Longdendale Urban District. Dr. Awburn reports :—

"I did not advise the Council to adopt the Notification of Births Act, 1911, because in a district like this it would be almost impossible to work it without considerable expense. Also, the infantile mortality is very low, and the medical men are daily in touch with their patients and midwives, so they soon know if anything is going wrong."

Nantwich Urban District. Dr. J. D. Munro records that the—

"Babies' Day Nursery continues to do good work, and is much appreciated by many mothers who work in factories. Fifty-two children were nursed there during the year, and the attendances numbered 1,874."

Despite this excellent work the infantile mortality continues to rule high here and the Sanitary Authority should direct their attention closely to other factors concerned.

NOTIFICATION OF BIRTHS ACT.

Dr. H. E. Gough (Northwich Urban District) states that :—

“The Notification of Births Act will shortly be adopted by the Council, and the lady superintendent of the baths (which have become derelict owing to subsidence) has been appointed Health Visitor at a salary of 15/- per week.”

This is unquestionably a wise move and should bring its own reward before long.

Nantwich Rural District. Dr. Turner reports that :—

“The Notification of Births Act is not in force in the District, nor can I recommend the Council to adopt it unless at the same time they will grant me the assistance of a properly trained Health Visitor. By this means only could advantage be taken of the early information to be obtained under the provisions of the Act. Such a visitor could also be of great use in visiting regularly the cases of consumption notified under the recent Order of the Local Government Board.

“The inspection of ‘nursed out’ infants by the Female Inspector under the Children Act is efficiently carried out. The instruction given by her is in accordance with a scheme drawn up by me. I consider that her work is of very great value.”

Dr. Awburn, Tintwistle Rural District, writes :—

“I did not recommend the Council to adopt the Notification of Births Act, 1911, because in a scattered district like ours (extending from E. to W. about 16 miles), it would be almost impossible to work it without considerable expense. Also the infantile mortality is very low, and the medical men are daily in touch with their patients and midwives, so that they soon hear if anything is going wrong.

It must be clearly understood that the adoption of this Act is not entirely a matter for the decision of the District Councils, for the Local Government Board have to approve of the action of the local Council, and in giving or withholding that approval the Board must be satisfied that some machinery exists or will be put into operation in the district for utilising the provisions of the Act for the control of infantile mortality. That is to say the Council must make some arrangement by means of the employment of Health Visitors or otherwise for domiciliary visitation and the tendering of personal advice to mothers in cases where such visits are deemed desirable. It ought to be possible for some arrangement to be made, say with the County Nursing Association, for the part time service of a District Nurse in the visitation of cases

where such is deemed necessary. This is done in Middlewich Urban District and Nantwich Urban District. Thus by the expenditure of a small sum annually the operation of this Act could be made reasonably effective.

The want of administrative machinery to follow up the notifications is responsible for the non adoption of the Act. But in districts where infantile mortality rules high this Act undoubtedly affords the best means of its reduction, and it is therefore hoped that such districts and particularly the Municipal Boroughs and Urban working-class districts will carefully consider the question and take progressive action.

The spending of say £100 per annum for a whole-time Health Visitor in a Municipal Borough, or of say £20 per annum in a large Urban District as a measure of this kind is surely not an item to appal any Local Authority. I venture to prophesy that once actual experience has demonstrated the advantages of the adoption of such a measure (and this will not take very long) there will not be found one single Local Authority where the appointment will be discontinued.

It is open to the County Council to adopt the Act for the whole of the Administrative County, but, like all Local Authorities, they would have to shew that they possessed or would put into operation the requisite machinery for effectively carrying out the intention of the Act. In a few Counties the County Council has adopted the Act and made arrangements for carrying it out. If such a system were adopted it might well include the supervision of midwives, the two things being carried out direct from the office of the County Medical Officer of Health, or as an alternative the County Council might retain the services of the nurses of the County Nursing Association where these are available.

The Local Government Board have the power under Section 3 of the Act to declare the Act to be in force in the area of any Local Authority who have power to adopt it, notwithstanding such Local Authority has not adopted it, but in the provinces one has not so far heard of any such declaration having been made.

The Municipal Boroughs of Crewe, Congleton, Dukinfield, and Hyde should, in my opinion, take steps to adopt the Act without further delay. Amongst other districts where the infantile mortality rules more or less high and where the operation of the Act would, in my opinion, work advantageously, are the following:—

ILLEGITIMATE INFANTS.

Altrincham	Urban District.
Ellesmere Port and Whitby	„
Hoole	„
Northwich	„
Runcorn	„
Sandbach	„
Winsford	„
Nantwich	Rural District.
Northwich	„

Illegitimate Infants.

In very few Reports is there any allusion to this matter.

In the Borough of Crewe 4.1 per cent. of the births registered were those of illegitimate children, and during the year 9 deaths occurred amongst this class of children.

This Report also shews for a number of years the death-rate amongst illegitimate children, and with two single exceptions (1900 and 1909) this is higher than that of children born in wedlock—see Table below.

Table shewing death-rate per thousand births of each class among legitimate and illegitimate children in the Borough of Crewe:—

	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Infantile Mortality of legitimate children	162	138	180	130	147	159	131	118	108	101	106	102	162
Infantile Mortality of illegitimate children	228	125	200	156	166	162	256	224	142	166	68	116	209

Dr. Barlow, reporting on this question in the Borough of Wallasey writes:—

“In 1911 there were 44 illegitimate births, and 10 deaths of illegitimate children below the age of one, giving a mortality rate per thousand children born of 227, which is more than double the infant mortality rate for the whole population. It is quite a common belief, and one not altogether confined to the layman, that the death-rate of illegitimate children should, as a matter of course, owing to constitutional

and other reasons, be higher than that of children born in wedlock. That this need not be so is shown by the records of the German institutions devoted to the care of young children.

"In a special report which I made on the Infantile Mortality Congress held in Berlin I referred to the fact that whereas in Berlin, as a whole, the infant mortality rate was 180 per thousand and the illegitimate rate 310. In the Berlin Municipal Orphanages, which deal with several thousands of children annually, there is no difference between the infant mortality rates of legitimate and illegitimate children. This suggests itself as an additional argument in favour of the institutional treatment of very young children above referred to."

In the Borough of Hyde, 28 illegitimate births were registered, and in the Borough of Macclesfield 59. Although in Macclesfield a number of prospective mothers resort to the Workhouse situated in the Borough for their confinement, the illegitimate birth-rate in this Borough is an unusually high one, being equal to 8.4 per cent. of the births registered. The figures given in certain other reports call for no special comment.

That the chances of life of the illegitimate child are but small compared with the child born in wedlock may be gathered from the following figures given by the Registrar-General (Seventy-second Report). The figures shew the deaths amongst legitimate and illegitimate infants at various age-periods in England and Wales during 1909, this being the most recent period for which such figures are available:—

Age.			All Infants.	Legitimate.	Illegitimate.
Under 1 year	...	...	108.73	104.35	211.18
Under 3 months	...	...	60.12	57.61	119.37
3—6 months	...	...	19.20	18.17	43.00
6—12 months	...	...	29.41	28.57	48.81

At all the age-periods named illegitimate infants have only about one-half the chance of life of those born in wedlock and the number of deaths at very early ages is most striking. If the truth were known the term 'done to death' would in many cases be a more appropriate one than merely 'died.'

STILL-BORN CHILDREN—ZYMOTIC DEATHS.

Still-born Children.

There is only one reference to this important matter in the Reports received, namely, in the Borough of Crewe, in which it is stated that during 1911 there were 64 still-born children interred in the Borough Cemetery, a number equivalent to 6.19 per cent. of the total births.

The registration of every still-birth under a certificate signed by a medical practitioner should be made compulsory, for there is little question that many so-called still-births are not such at all.

It is not sufficiently known that *the adoption of the Notification of Births Act ensures the notification of all cases of still-birth*—an additional argument for the putting in force of this most useful measure.

Deaths from Zymotic Disease.

Under this heading are included deaths from certain zymotic diseases specially scheduled by the Registrar-General, namely:—small-pox, scarlet fever, measles, diphtheria (including membranous croup), whooping-cough, fever (typhus, typhoid, continued, and ill-defined fevers of uncertain origin), and diarrhoeal diseases of zymotic origin. The death-rate in the Administrative County from this group of diseases during 1911 was 1.80 per thousand of the estimated population. In the 7 Municipal Boroughs it was 2.22, in the 35 other Urban Districts 1.82, and in the Rural Districts 1.20 per thousand of the estimated populations.

Under this heading there were no fewer than 1,228 deaths in the County, a number more than twice as great as that for the previous year.

In England and Wales as a whole the corresponding rate was 1.88 per thousand, in the 77 great towns 2.29, in the 136 smaller towns 1.98, and in the Rural Districts 1.40. The rates appear to have been unusually high in the following areas:—

Dukinfield M.B.	..	..	4.14
Stalybridge M.B.	...	...	3.46
Ellesmere Port and Whithy U.D.			3.23
Buglawton U.D.	..	...	2.79
Runcorn U.D.	...	...	2.52
Middlewich U.D.	...	...	2.44
Crewe M.B....	...	...	2.41
Hyde M.B. ...	..	...	2.36
Altrincham U.D.	...	...	2.24
Congleton M.B.	...	...	2.20

Whooping-cough, measles, and, in particular, diarrhoeal diseases have been responsible for the great majority of these deaths.

The deaths in the Administrative County from the various components of this general cause of death have been as under :

Small-pox	...	...	...	1
Measles	...	...	...	153
Scarlet Fever	...	...	...	29
Diphtheria	...	...	...	88
Whooping-cough	..	...	...	142
"Fever"	...	...	...	36
Diarrhoea	...	...	...	779
Total Deaths				1228

The death-rates in Cheshire (Administrative County) and England and Wales from this class of disease for the past ten years have been as under :—

Year.	Cheshire.	England and Wales.
1911	1.80	1.88
1910	0.77	1.23
1909	0.66	1.12
1908	1.13	1.29
1907	1.14	1.26
1906	1.27	1.73
1905	1.10	1.52
1904	1.84	1.94
1903	1.15	1.46
1902	1.19	1.64

The rate for 1911 thus stands out as the highest rate but one on record during this period. Subject as this rate is to somewhat extreme fluctuations, chiefly due to the prevalence and fatality of diseases which are apt to occur in epidemic outbursts, too much must not be made of the statistics of a single year. A comparison with the records of previous years as to deaths from the various zymotic diseases is useful and interesting.

Presented as rates per thousand persons living these may be arranged as follows, comparative figures being given for the ten preceding years :—

SCARLET FEVER.

Year.	1911.	1910.	1909.	1908.	1907.	1906.	1905.	1904.	1903.	1902.	England & Wales. 1911.
Smallpox ...	0.001	0.001	0.0	0.0	0.0	0.0	0.0	0.03	0.02	0.003	0.00
Measles ...	0.22	0.13	0.18	0.21	0.35	0.13	0.23	0.48	0.10	0.33	0.36
Scarlet Fever ...	0.04	0.07	0.12	0.12	0.10	0.11	0.09	0.10	0.15	0.11	0.05
Diphtheria and Membranous Croup	0.12	0.16	0.11	0.15	0.14	0.15	0.17	0.15	0.13	0.24	0.13
Whooping Cough ...	0.20	0.18	0.06	0.23	0.25	0.14	0.16	0.35	0.32	0.19	0.21
Fever ...	0.05	0.07	0.06	0.08	0.06	0.09	0.10	0.11	0.06	0.11	0.07
Diarrhœa ...	1.14	0.13	0.22	0.34	0.19	0.65	0.35	0.62	0.32	0.21	1.06
Total rate ...	1.80	0.77	0.66	1.13	1.14	1.27	1.10	1.84	1.15	1.19	1.88

The diarrhœal death-rate is thus seen to be far higher than any previous record during the 10 years given; indeed almost twice as high as the highest rate recorded during the preceding 10 years.

Scarlet Fever.

There were 29 deaths due to this disease during 1911, 15 in the Municipal Boroughs, 10 in the 35 other Urban Districts, and 4 in the 12 Rural Districts. The death-rate from this disease in the Administrative County was 0.04 per thousand persons living.

Last year there were 51 deaths from this disease in the Administrative County, the death-rate being 0.07 per thousand of the estimated population.

During the past 40 years the fall in the mortality from scarlet fever has been remarkable, not only in this County but throughout the whole country. The type of disease prevalent of recent years is totally different from what it was say 20 years ago. The disease still remains exceedingly fatal to children under the age of 10 years, and particularly to children in the first five years of life. The decline in scarlet fever mortality as a whole is now regarded as being due to a milder form of infection rather than a diminished occurrence of the disease. The returns of the Metropolitan Asylums Board from 1872 onwards show that the number of deaths occurring in the huge number of scarlet fever cases treated annually in these hospitals is steadily declining.

Diphtheria and Membranous Croup.

These diseases are now universally classed together as diphtheria. Very few cases now occur, however, where the term "membranous croup" is used. The number of deaths due to these causes during 1911 in the Administrative County was 88, a number equal to a death-rate of 0.12 per thousand persons living. This is a decrease of 32 deaths as compared with the record of 1910, almost entirely due to the very serious epidemic at Crewe having considerably abated.

From the Reports of the Registrar-General it is apparent that according to recent experience at all events, diphtheria still continues much more destructive in the town than in the country, although it was in early years considered to be mostly a disease of country districts. This fact is particularly noticeable in children under 5 years of age, who die of it practically at twice as great a rate in Urban areas as they do in Rural. In England and Wales the mortality from this disease in children under 5 years of age has practically been halved since 1901, but this diminution does not hold in children slightly older, *i.e.*, in the 5—10 year period of life who are living in Rural areas, though it does hold for such children residing in Urban areas. This decline in the mortality is almost without doubt due to the use of antitoxin. There is no question that a certain proportion of the deaths ascribed to such conditions as "quinsy," "ulcerated sore throat," "tonsillitis," &c., are really of diphtheritic nature, and as bacteriological examination continues to be more utilised for purposes of diagnosis, it is probable that a greater proportion of these deaths will eventually be recorded under the heading of diphtheria. That this is actually taking place to some extent at the present day is evident from the fact that the mortality from "tonsillitis," "ulcerated sore throat," "quinsy," &c., is becoming smaller every year.

Whooping-cough.

There were no less than 142 deaths ascribed to this cause, a number equal to a death-rate of 0.20 per thousand persons living. The deaths occurred as under:—

7 Municipal Boroughs	...	...	29 deaths.
35 Other Urban Districts	...	...	68 ,,
12 Rural Districts	...	..	45 ,,

This is a considerable increase on previous years; it is also the highest death-rate from any of the zymotic diseases except measles and diarrhœal diseases.

WHOOPING-COUGH—MEASLES.

There were 28 deaths in Northwich Urban District, 15 in Northwich Rural District, and 12 in the Borough of Macclesfield.

Coincident outbreaks of whooping-cough and measles appear to have occurred in several districts and these have had a most marked effect on the death-rates of these areas.

Whooping-cough is still almost confined in its fatal effects to children under the age of 5 years. Whereas measles, scarlet fever and diphtheria are more fatal in the second and fourth years of life, whooping-cough is more fatal in the first year of life than in any subsequent year of the first five. Another peculiarity of whooping-cough mortality is that it is greater amongst girls than amongst boys. In Urban areas children die from whooping-cough at a greater rate than in Rural areas, in some instances the mortality being from 5 to 7 times as great in crowded Urban districts as in the less populous Rural districts, probably owing to the greater prevalence of overcrowding and the consequently greater incidence of broncho-pneumonia.

Measles.

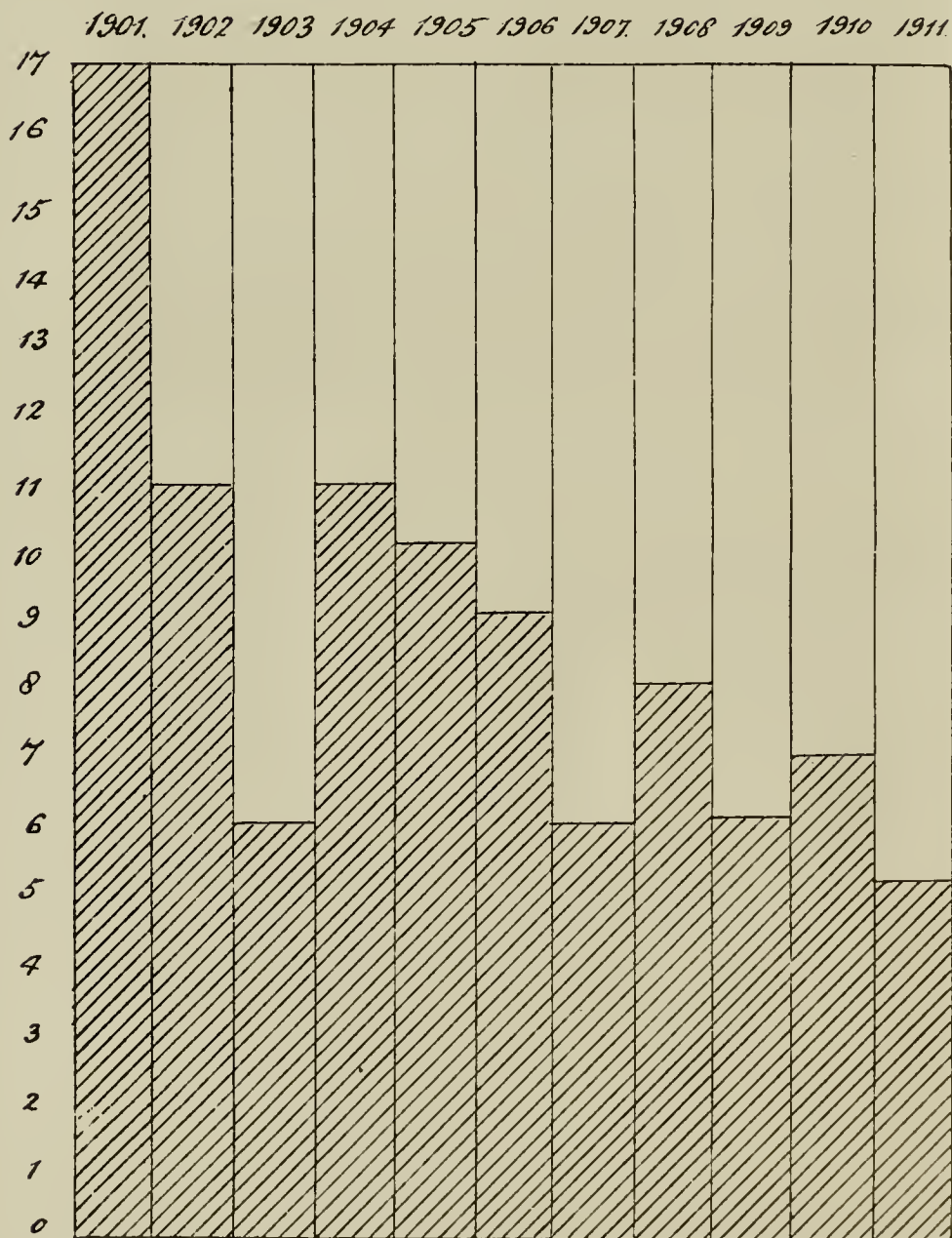
This disease was seriously prevalent in many sanitary areas during 1911 and caused no fewer than 153 deaths.

It is really high time that some stronger measures were made available for dealing with this disease and that of whooping-cough from a preventive point of view. It would be a simple matter for the Local Government Board to draw up regulations under S. 130 of the Public Health Act, 1875, for preventing their spread embodying in such regulations the precautionary measures enumerated in SS. 126, 127, 128, and 129 of the same Act, and S. 5 of the Infectious Diseases Prevention Act, 1890. Something of this kind has been done in London, and has been operated without causing unnecessary interference with "the rights of the people." One does not even hear of the Local Government Board stimulating research into the causes of these two diseases, though special grants are being regularly made in aid of the investigation of diseases which are as rare compared with measles and whooping-cough as orchids are to daisies. The saying of Goethe that "Nature attaches her curse to all inaction," is well exemplified in the case of these two diseases.



DEATH RATE FROM "FEVER" IN CHESHIRE.

———— 1901 – 1911. ————



Fever.

This term which is now practically obsolete and which does not appear in any of the Local Government Board Tables for this year embraces typhus, typhoid or enteric, and other continued fevers. Seeing that typhus fever is extinct except for very rare and isolated cases, and that continued fever is synonymous with enteric or typhoid fever this group of diseases may be looked upon as representative of typhoid fever only. The deaths due to "fever" in the Administrative County during 1911 numbered 36, equal to a rate per thousand persons living of 0.05. The death-rate from this disease or group of diseases has not been a high one in the County for many years. London is usually regarded as a City in which typhoid fever is present almost to a minimum degree, and the death-rates from enteric or typhoid fever therein for many years closely resemble those for Cheshire.

Cases of "simple continued fever" are becoming very much rarer than they were a few years ago, and are probably being transferred to the typhoid fever group. The same remark applies to the disease termed febricula. These terms only appear in the Reports of one or two of the older Medical Officers of Health in the County. According to the Reports of the Registrar-General the mortality from typhoid fever has dropped considerably during the course of the last 30 years. The drop was very marked during the first 20 years of that period, but during the past 10 years it has not been so great. This diminution in mortality is due rather to lessened prevalence than to a diminution in the fatality rate amongst those attacked. Another fact emphasised by the Registrar-General is that enteric fever is enormously more fatal in the town than in the country, and that both in town and country the death-rates in males above the ages of 10 years considerably exceed those in females. Stalybridge contributed 7 deaths to the total, and Dukinfield 5, the remainder being spread fairly equal over the Administrative County.

Diarrhoeal Diseases.

There are no fewer than 779 deaths recorded in the Administrative County as due to diarrhoea and enteritis, a number very much higher than that for 1910 or indeed for any year for which I can find records. The diarrhoeal death-rate was thus 1.14 per thousand persons living, a figure which is in excess of any previous records. The deaths occurred as under:—

DIARRHOEAL DISEASES.

7 Municipal Boroughs ...	371 or 47.8 per cent. of the total.		
35 Other Urban Districts...	283 or 36.2	„	„
12 Rural Districts ...	125 or 16.0	„	„

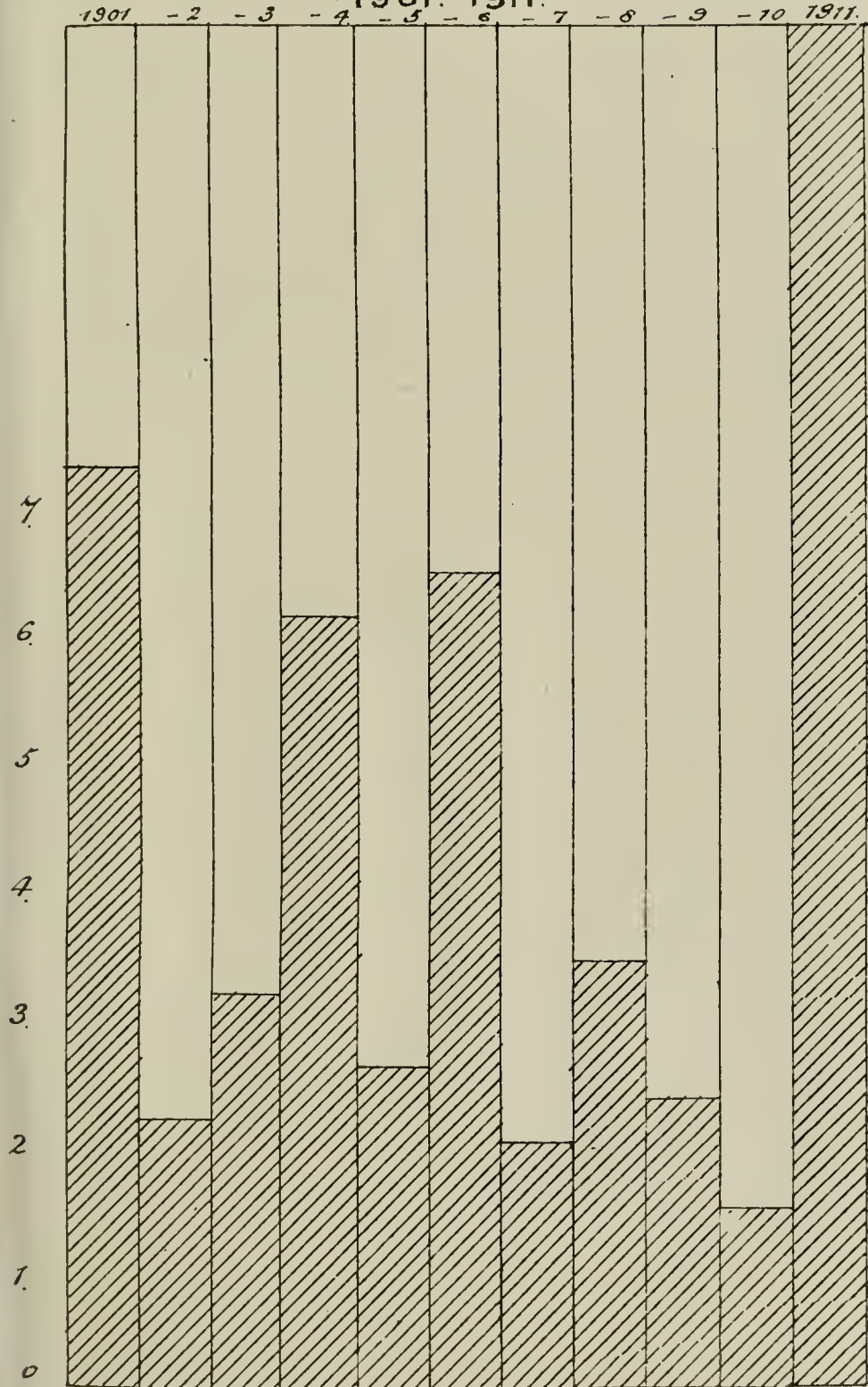
Crewe Municipal Borough had a somewhat large share of these deaths—85 in all, Wallasey Municipal Borough 75, Dukinfield 54, Hyde 52, and Macclesfield and Stalybridge 44 and 41 respectively. The Urban districts of Northwich and Runcorn suffered excessively from diarrhoeal prevalence and there were 41 deaths in each from this group of diseases. There appears also to have been severe epidemics of it in Altrincham Urban District, Ellesmere Port Urban District, Sale Urban District, and the Rural Districts of Nantwich and Northwich.

There still exists some confusion as to the names used to denote diseases of a diarrhoeal nature. In many death returns it is common to find gastro-enteritis, muco-enteritis, or gastro-intestinal catarrh. It is therefore important to observe that all these terms have been condemned by the Royal College of Physicians, and it is certainly expedient that their use should be discontinued altogether. The simple and unsatisfactory term diarrhoea, however, is gradually disappearing, and the more definite terms epidemic diarrhoea, or zymotic or infective enteritis are taking its place. In view of the very high importance attached to diarrhoeal diseases in connection with the problem of infantile mortality it is to be hoped that practitioners throughout the country will endeavour to assist those responsible for the public health by making use of the more definite terms mentioned. In the figures given above and in the statistical Table at the end of this Report the following diseases are included—epidemic or summer diarrhoea, epidemic infective or zymotic enteritis, dysentery, dysenteric and choleraic diarrhoea, cholera (other than Asiatic or epidemic), and cholera nostras.

One would like to see a much greater interest manifested in this disease than is usually the case. There is much to be learned in reference to it, and there was certainly a unique opportunity for a study of it during 1911. The following are extracts from the Reports of District Medical Officers of Health:—

CONGLETON MUNICIPAL BOROUGH.—“A very extensive and severe epidemic of diarrhoea began in the end of July, and continued till the end of September. All classes and ages were

- DEATH RATE FROM DIARRHOEAL DISEASES. -
1901-1911.





apparently equally liable to attack, and it did not seem that insanitary conditions of dwellings, or improper or unwholesome food had much to do with the matter; although, no doubt such conditions would influence the fatality. The only cause that can be at all definitely spoken of was the extremely hot weather which prevailed throughout the outbreak, the cessation of which brought it to an end. There were 20 deaths, 11 being infants under 1 year, 5 above 1 and under 2, and 4 of adults, all except 1 being over 70 years of age, showing that the natural feebleness of the two extremes of life was an important element in determining the fatality; next in importance to that was the treatment and care the sufferers received, which would necessarily be less in the case of the poor than in those in a better position, and would account for the deaths being mainly of the former class."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"With regard to epidemic diarrhoea the following measures were undertaken with a view to mitigation:—

- (a) Ashpits were emptied with twice the usual frequency.
- (b) The sewers, particularly in the more populous parts of the district, were repeatedly flushed.
- (c) The districts where it was most prevalent were visited from house to house, and general instructions given to the occupiers.
- (d) Disinfectants were supplied free to those who desired them."

SALE URBAN DISTRICT.—"This was very prevalent owing to the long hot and dry summer and was fatal in 24 instances. Printed sheets, explaining in simple terms the importance of preserving the milk from contamination by outside influences and describing how this could be compassed, were widely distributed in the poorer parts of the district, but it is feared that parents are either indifferent or unwilling to take the little necessary trouble required in this matter, with results which are frequently disastrous. In many cases, too, diarrhoea in infants is looked upon as a natural consequence of the process of teething, and medical help is not summoned until it is too late to be of any avail."

The remarks of some of the other Medical Officers of Health are contained under the heading *Infantile Mortality*.

RESPIRATORY DISEASES—EPIDEMIC INFLUENZA.

Respiratory Diseases.

The chief of these are bronchitis, broncho-pneumonia, pneumonia and pleurisy. The total deaths in the Administrative County during 1911 from this group of diseases were 1,339, equal to a death-rate per thousand persons living of 1.97. The death-rate from this group of diseases during the past ten years has been as follows:—

Year.			Death-rate.
1911	...	...	1.97
1910	...	...	1.8
1909	...	...	2.3
1908	...	...	2.08
1907	...	...	2.2
1906	...	...	2.12
1905	...	...	2.26
1904	...	...	2.52
1903	...	...	2.22
1902	...	...	2.58

There is thus a perceptible decline in the death-rate from this class of disease, the rate recorded for 1911 being the second lowest for over 10 years.

From certain figures collected by the Registrar-General it would appear that the mortality from pneumonia is greater in town than in country districts by more than 75 per cent. In general the mortality of males greatly exceeds that of females, and amongst children under the age of 5 years pneumonia is particularly fatal.

Lobar Pneumonia is now definitely recognised as one of the infective diseases, and for a good many years there has been a tendency amongst all connected with preventive medicine to regard most forms of pneumonia as infective.

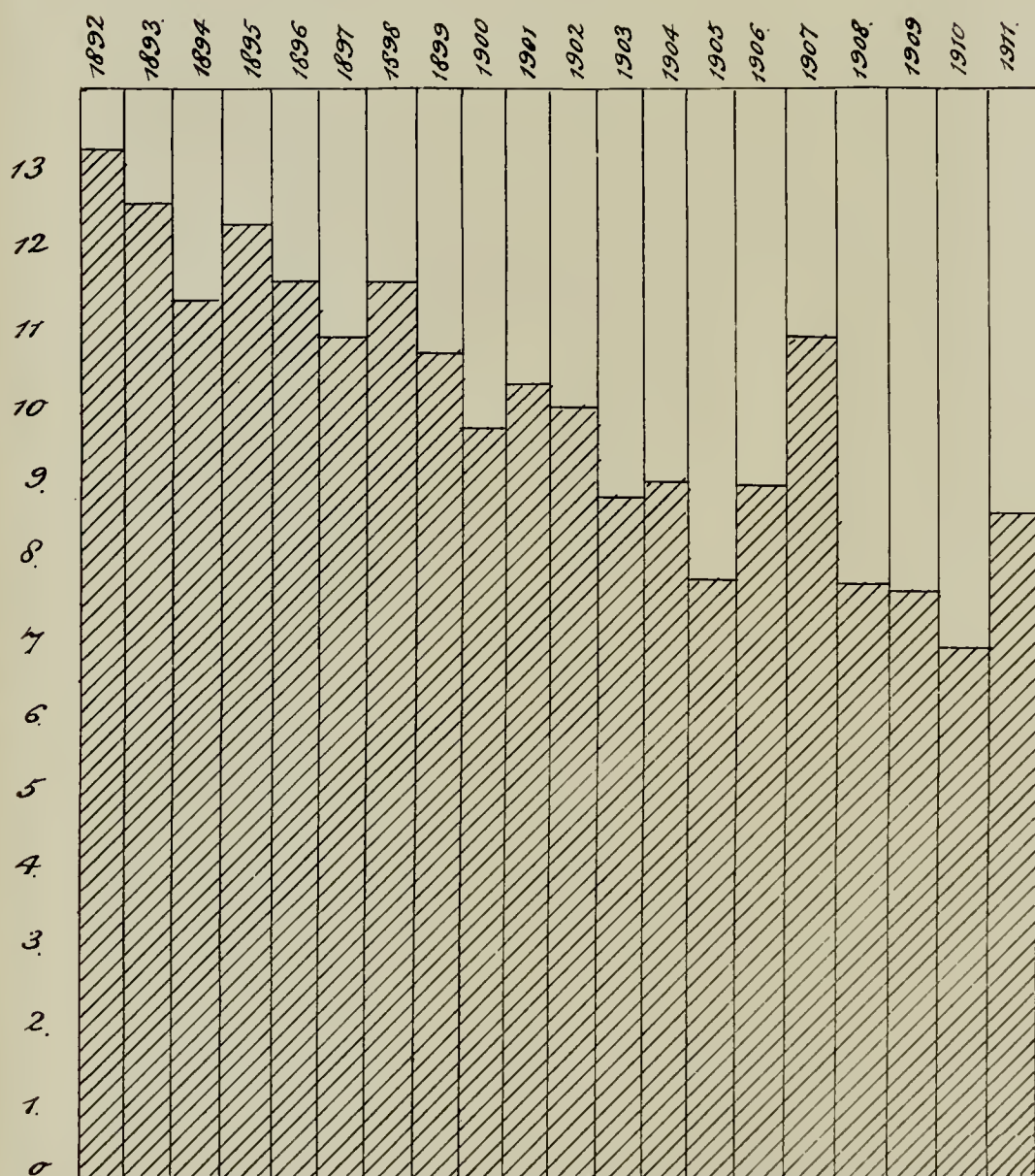
Epidemic Influenza.

During 1911 there occurred 38 deaths in the County as the direct or indirect result of this disease. This shows a marked decline on the records of previous years.

No district appears to unduly share in the total.



DEATH-RATES FROM PHTHISIS (PULMONARY — CONSUMPTION) 1892-1911. —



Pulmonary Phthisis.

This disease claimed no fewer than 589 victims during 1911 in the Administrative County, a number equal to a death-rate of 0.85 per thousand persons living. This is not such a favourable rate as that recorded for the past few years and may be due to the greater facilities for diagnosis which are now available. For some years I anticipate that two opposing factors will influence the death-rate from phthisis—the improvement of methods of diagnosis both clinical and bacteriological and the increasing attention to preventive and curative methods. Whether these will counterbalance each other it is not easy to say. As the matter is one of very considerable interest, I append the rates for the County of Cheshire and for England and Wales as far as the latter are within my reach.

Year.	England and Wales.	County of Cheshire.
1892	...	1.31
1893	...	1.25
1894	...	1.12
1895	1.426	1.22
1896	1.327	1.14
1897	1.356	1.09
1898	1.325	1.14
1899	1.339	1.06
1900	1.337	0.95
1901	1.264	1.02
1902	1.233	0.97
1903	1.203	0.86
1904	1.236	0.89
1905	1.140	0.76
1906	1.150	0.89
1907	1.140	1.08
1908	1.11	0.76
1909	1.08	0.74
1910	—	0.71
1911	1.015	0.85

The death-rate from phthisis, it will be seen, shews a decided decrease during the past 18 years. The decrease has been fairly gradual and steady throughout, and provided there is, as we are now fairly assured there will be, a stimulation of public and private efforts for the control of the disease this decrease ought to be maintained.

There are still some ill-defined terms used in death certificates for tuberculous conditions, and the old name “tabes mesenterica” is particularly to be noted. This name has

PULMONARY PHTHISIS.

now been expunged from the nomenclature of the Royal College of Physicians, and it is to be hoped that the use of the name will before long be abandoned by practitioners. Deaths under this heading should be certified as tuberculosis of peritoneum, intestine, mesenteric glands, &c.

Specific inquiries were forwarded to all the districts in the Administrative County early in 1912 in order to ascertain what steps were being taken in the matter of the prevention of consumption. The questions and replies are tabulated and submitted herewith. The whole face of the matter is, however, now altered by the recent Tuberculosis Regulations and I think all Local Authorities have now embarked on a more or less complete anti-tuberculosis programme.

		Any system of notification.	Any sanitary inspection of Patients' houses.	Any disinfection of ditto.	Any distribution of advice.	Any action re spitting.
Municipal Boroughs—						
Congleton	...	Yes.	Yes.	Yes.	Yes.	Yes.
Crewe	...	Voluntary.	Yes.	Yes.	Yes.	No.
Dukinfield	...	No.	No.	Yes.	No.	No.
Hyde	...	Voluntary.	Yes.	Yes.	Yes.	No.
Macclesfield	...	Voluntary.	Yes.	Yes.	Yes.	Yes.
		1/- per case paid.				
Stalybridge	...	No.	Yes.	Yes.	Yes.	No.
Wallasey	...	No.	Yes.	Yes.	Yes.	Notices exhibited in public places.
Other Urban Districts—						
Alderley Edge	...	No.	No.	Yes.	Yes.	No.
Alsager	...	No.	Yes.	Yes.	Yes.	Sputum cups & anti- septics provided.
Altrincham	...	No.	No.	No.	No.	No.
Ashton-upon-Mersey	...	Yes.	Yes.	Yes.	Yes.	No.
Higher Bebington	...	No.	No.	No.	No.	No.
Lower Bebington	...	No.	Yes.	Yes.	Verbal.	No.
Bollington	...	No.	Yes.	Yes.	Yes.	Yes.
Bowdon	...	No.	Yes.	Yes.	Yes.	Yes.
Bredbury and Romiley	...	No.	Yes.	Yes.	Yes.	Yes.
Bromborough	...	Yes.	Yes.	Yes.	Yes.	No.
Buglawton	...	No.	Yes.	Yes.	Yes.	Yes.
Cheadle	...	No.	No.	Yes.	No.	No.
Compstall	...	No.	No.	No.	No.	No.
Ellesmere Port and Whitby	...	No.	Yes.	Yes.	Yes.	Yes.
Hale	...	No.	Yes.	Yes.	Yes.	No.
Handforth	...	No.	No.	No.	No.	No.
Hazel Grove and Bramhall	...	Yes.	Yes.	Yes.	Yes.	Yes.
Hollingworth	...	No.	No.	No.	No.	No.
Hoole	...	Voluntary.	Yes.	Yes.	Verbal	No.
Hoylake	...	No.	Yes.	Yes.	Yes.	No.
Knutsford	...	Voluntary.	Yes.	Yes.	No.	No.
Lymm	...	No.	No.	No.	Yes.	No.

PULMONARY PHTHISIS.

			Any system of notification.	Any sanitary inspection of Patients' houses.	Any disinfection of ditto.	Any distribution of advice.	Any action re spitting.
Marple ...	...	...	No.	Yes.	Yes.	Yes.	Sputum cups & anti-septics provided.
Middlewich ...	...	...	Voluntary.	Yes.	No.	Yes.	Yes.
Mottram ...	...	...	Information not furnished.				
Nantwich ...	...	...	Voluntary.	Yes.	Yes.	Yes.	Yes.
Neston and Parkgate	...	...	No.	Yes.	Yes.	Yes.	No.
Northwich ...	...	...	No.	Yes.	Yes.	Yes.	No.
Runcorn ...	...	...	Information not furnished.				
Sale ...	...	...	Information not furnished.				
Sandbach ...	...	...	No.	No.	Yes Paupers.	Yes.	No.
Tarporley ...	...	...	Information not furnished.				
Wilmslow ...	...	...	No.	Yes.	Yes.	Yes.	No.
Winsford ...	...	...	No.	As far as possible when notified.			
Yeardsley-cum-Whaley	...	...	No.	Yes.	Yes.	No.	No.
Rural Districts—							
Bucklow ...	...	...	Voluntary.	Yes, on occasion.	Yes, after death.	Yes.	No.
Chester ...	...	...	No.	No.	No.	No.	No.
Congleton ...	...	...	No.	Yes, if known.	Yes, on death.	Yes.	No.
Disley ...	...	...	No.	No.	No.	No.	No.
Macclesfield ...	...	...	No.	No.	No.	No.	No.
Malpas ...	...	...	No.	No.	No.	No.	No.
Nantwich ...	...	...	No.	Yes.	Yes.	Yes.	Yes.
Northwich ...	...	...	No.	Yes.	Yes.	Yes.	No.
Runcorn ..	...	...	Voluntary, without fee.	On re-quest.	Yes.	No.	No.
Tarvin ...	...	...	No.	No.	No.	No.	No.
Tintwistle ...	...	...	Information not furnished.				
Wirral ...	...	...	No.	No.	When requested.	No.	No.

Procedure in the matter of the prevention of phthisis in this County is already in a fairly progressive stage, as may be gathered from a perusal of the above summary and of the following notes taken from the Annual Reports of the District Medical Officers of Health.

There is in the reports of District Medical Officers of Health an increase in the number of special allusions to the control of this disease.

None of the Local Authorities, however, perhaps with the exception of the Borough of Crewe, Macclesfield and Wallasey, appear to have utilised to the full the powers conferred on them by the Tuberculosis Regulations of 1911. These powers

PULMONARY PHTHISIS.

briefly enable Councils, acting on the advice of their Medical Officers of Health to:—

- (a) Supply all such medical or other assistance as may reasonably be required for the *detection* of Pulmonary Tuberculosis:
- (b) Supply all such facilities and articles as may be reasonably required for the *detection* of Pulmonary Tuberculosis:
- (c) Supply medical and other assistance and all reasonable facilities and articles for *preventing the spread of infection*:
- (d) Supply medical and other assistance and reasonable facilities and articles for *removing conditions favourable to infection*:
- (e) Appoint such Officers as may be necessary for this purpose:
- (f) Provide and publish placards, handbills or leaflets or summaries of information and instruction respecting Pulmonary Tuberculosis and the precautions to be taken against it.

The possibilities opened up by the granting of these powers are very great and if utilised to the full would undoubtedly lighten the burden which in an indirect manner is imposed by the National Insurance Act. I have drawn up a list of suggestions for action and draft forms of inquiry, leaflets of instruction and so forth which will shortly be circulated to all District Medical Officers of Health.

I append some extracts from the reports received on this important question.

CREWE MUNICIPAL BOROUGH.—“The notifications received and the deaths among the patients notified were as follows:—

		Notifications.	Deaths.
Under Tuberculosis Regulations,	1908	7	4
”	”	4	1
Voluntary	... ..	8	2
		<hr/>	<hr/>
		19	7

“The total number of deaths in the town is one less than in 1910 and is 5 more than the average yearly number of deaths since 1874.

"In 1906, the Health Committee applied to the Local Government Board to have consumption made a compulsory notifiable disease but were unsuccessful. Voluntary notification was then adopted.

"Since then, under the Tuberculosis Regulations of 1908, parish cases have been notifiable, and under the 1911 Regulations, General Hospital cases.

"As an aid to the early detection of pulmonary tuberculosis, the Health Committee have for some years provided for the bacteriological examination of sputa. In 1911, the specimens sent and the results were:—

	Specimens.	Result.	
		Positive.	Negative.
Municipal Laboratory	14	4	10
Manchester ,,	28	8	20
	<hr/> 42	<hr/> 12	<hr/> 30

"After the adoption of voluntary notification, suitable cases were admitted for treatment into an empty ward at the Isolation Hospital. Early in 1909, however, an open-air revolving shelter to hold two beds was erected in the grounds.

"A stay in the shelter for some weeks serves a two-fold purpose: it improves the health of the patient, and secondly, is a means of education in the methods calculated to prevent the spread of the disease. The proper disposal of sputum, the best means of combining rest and graduated exercise and the value of fresh air night and day are shown to the patients.

"The patients admitted to the shelter in each year have numbered:—in 1909, 7; in 1910, 6; in 1911, 8.

"The following are some details of the patients admitted during 1911:—

1. M., aged 40 years, Boilermaker. Admitted March 18th, discharged April 5th. Weight on admission 118 lbs., ditto on discharge 130 lbs., gain 12 lbs. Died March 4th, 1912.

2. M., aged 22 years, Locomotive Cleaner. Admitted April 10th, discharged April 19th. Weight on admission 108½ lbs., ditto on discharge 112½ lbs., gain 4 lbs.

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3. M., aged 37 years, Stonemason. Admitted April 11th, died April 19th from hæmoptysis. Weight on admission $90\frac{1}{4}$ lbs., ditto on April 18th $92\frac{1}{4}$ lbs., gain 2 lbs.

4. M., aged 30 years, Fitter. Admitted June 12th, discharged July 17th. Weight on admission 126 lbs., ditto on discharge $143\frac{3}{4}$ lbs., gain $17\frac{3}{4}$ lbs.

5. M., aged 27 years, Painter. Admitted July 18th, discharged August 22nd. Weight on admission 113 lbs., ditto on discharge $123\frac{1}{2}$ lbs., gain $10\frac{1}{2}$ lbs.

6. F., aged 21 years, Domestic Servant. Admitted August 28th, discharged October 14th. Weight on admission $124\frac{1}{2}$ lbs., ditto on discharge $140\frac{1}{2}$ lbs., gain 16 lbs.

7. M., aged 32 years, Fitter. Admitted October 18th, discharged October 26th. Weight on admission 115 lbs., ditto on discharge $117\frac{1}{2}$ lbs., gain $2\frac{1}{2}$ lbs.

8. M., aged 22 years, late Naval Service. Admitted October 18th, discharged November 1st. Weight on admission 103 lbs., ditto on discharge 103 lbs. Died January 8th, 1912.

Case 7 had to be discharged for breach of rules and case 8 left at his own request. A gain in weight will be noticed in each case treated except case 8 where the disease was very advanced.

"So far it has not been practicable to deal with early cases only in the shelter, the greater number of the patients had the disease in an advanced form before admission or notification.

"In July I was instructed to report to the Committee as to an open-air shelter for female patients and submitted a special report thereon. The following is an extract from that:

"Additional shelter accommodation will be desirable, and is clearly shown to be called for in view of the number of deaths which occur from this disease, but I beg to submit to the Committee that the present is an inopportune juncture to consider the matter.

"As the Committee are aware the National Insurance Bill which is at present before Parliament makes provision for the erection of Sanatoria or other means of dealing with phthisis throughout the country, towards the cost of which grants will

be made by the Imperial Exchequer, and the needs of each area will be taken into consideration. Until it is known to what extent aid will be available for this purpose locally, structural extensions which entail expenditure upon sanitary arrangements and nursing staff had better be deferred.

“Although it does not arise out of the matter which I have been instructed to report upon, there is a method of minimising the spread of the infection from consumptive patient which I suggest it would be beneficial to adopt, namely, the provision of cheap cardboard sputum boxes and a small card of instruction as to their use. At present only the patients who have been in the shelter are given receptacles, and, as I consider that the destruction of all the sputum is of vital importance to the relatives of a consumptive patient, as well as in the interests of public health, I recommend that the Committee adopt these precautions.

“In addition to the provisions made by the Health Committee for dealing with pulmonary tuberculosis, poor law cases in the Borough are further provided for by the Guardians of the Nantwich Union. Open-air shelters are in use at the Workhouse.

“Each patient admitted to the shelter is given a sputum flask on discharge, the proper use of which has been explained and the method of dealing with the sputum practised while in the Hospital.

“In addition, the Health Committee resolved to adopt the suggestion in the special report *re* cardboard sputum boxes and cards of instruction. Such are now provided and used by all the patients notified, who have no sputum flasks.

“The disinfection of the room in which a patient has died is systematically carried out when the consent of the relatives is obtained. It is satisfactory to find the public becoming more and more ready to adopt this precaution and to have all infected garments and bedding disinfected by steam.

“Empty infected houses are also disinfected.

“Visitation and sanitary inspection of dwellings is regularly carried out in all the cases notified, and any conditions found prejudicial to the patient's welfare are remedied so far as is practicable. Advice as to precautionary

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measures is given systematically and the cases re-visited at regular intervals.

“When the enactments to deal with tuberculosis have come into operation in this borough, the scheme of the Local Insurance Committee should be such as to bring about complete co-ordination between the preventive work already done by your Committee and the proposed extensions under the Act.

“Further, the local work in the tuberculosis problem will best attain its greatest results in each case, in proportion to its intimate linking up with that of the County as a whole.

“A well organised tuberculosis dispensary should form the starting point of the extended preventive and curative work in the Borough. Here the information at present available in the Public Health Department could be made full use of in home visitation and the detection of early cases of the disease, tuberculin given its due place in the treatment of suitable cases, and patients for open-air treatment in either shelters, sanatoria or other institutions selected. In addition, the municipal bacteriological laboratory would be available for the necessary research work.

“The question of Sanatorium accommodation, or Homes for advanced cases of tuberculosis can only be economically dealt with on a County or combined Counties basis.”

During the year the Medical Officer of Health for the Municipal Borough of Macclesfield submitted a scheme for dealing with certain cases of phthisis at the Isolation Hospital. The following report is interesting at the present moment:—

“With a view to checking the excessive prevalence of tuberculosis in this Borough, it is proposed to treat a certain number of cases in the (at present) disused small-pox hospital.

“It is intended, if approved by the Health Committee and the Council, to deal with six or eight cases of pulmonary tuberculosis at the same time, and to keep them in hospital about six weeks each.

“During this time it would be possible to educate them as to the correct method of living, to materially improve their health and to send them home drilled in the methods of pre-

venting the spread of infection to others, and in the value to themselves of living in fresh air.

“Experience shews that such people become valuable health missionaries to the neighbourhood in which they live.

“The advantages to be derived from this course of treatment would thus be dual: firstly *educational*, and secondly *curative*.

“The selection of cases would in the first instance be made from the crowded dwellings of poor people where infection is spread broadcast.

“It is considered that two nurses and one maid would be a sufficient staff to deal with the cases and it is only reasonable to expect such patients as are able to render all the help possible.

“This is the policy followed in almost all working-class sanatoria.


“The details of cost have been carefully considered and are set out below.

“I believe it is possible to materially reduce the mortality from consumption in this town by following out such a course of action for a few years.

“I would point out that in the estimate of cost, allowance has been made for the liberal feeding of the patients, which is a most essential part of the treatment.

“It may also be pointed out that in case of an outbreak of small-pox, the tubercular patients could at once be sent home and the hospital devoted to its original purpose.

“Estimate of the cost of treating 50 cases of pulmonary tuberculosis in the present small-pox hospital during the next financial year.



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		£	s.	d.
Wages and other expenses :—				
1 Day nurse, salary per annum	25	0	0
1 Night nurse, do.	25	0	0
1 Ward maid and general servant	... ..	26	0	0
Uniform for two nurses per annum	... ..	8	0	0
Fuel, oil and other sundries, £1 per week	... ..	52	0	0
Milk and food for 8 cases, 2 nurses and 1 maid taken at 1/- each per day—£3 17s. 0d. per week	... ..	200	4	0

N.B.—The daily cost of food at the Fever
Hospitals for the year ended 31st
December, 1909, was 8½d. per head.

		336	4	0
Probable cost of small structural alterations for purposes of extra ventilation, provision of bedsteads, &c., being a charge on the expenditure for the first year				
	... ..	30	0	0
		£366	4	0

“A 1d. rate in the £ is estimated to produce the sum
of £375.”

This scheme was unanimously sanctioned by the Council
in February, 1911, and has been in operation ever since.

WALLASEY URBAN DISTRICT.—“It has been the practice
in this district to disinfect after every death from phthisis.
The method of disinfection is as follows:—The infected rooms
are sprayed with a strong solution of formalin, and the
bedding and clothing taken away to be disinfected by steam.
It has been the custom to ask permission from the landlord
to strip the paper from the walls of the infected room, and
to limewash the ceilings, but in future, under the extra
powers given in connection therewith, this work will be done
whether permission is granted or not. During 1911, 93
houses or parts of houses were disinfected, and 64 rooms
stripped. Bedding, &c., was disinfected in almost every
instance, bedding being destroyed in a few cases, and in a
number of instances the disinfection could not be carried out,
owing to other persons occupying the room or it was not con-
sidered necessary.

“Disinfection is also carried out periodically in the houses in which known phthisis patients live, and on any change of their address the rooms formerly occupied by a patient are disinfected whenever possible. The same difficulty noted in previous years with respect to this disinfection has been experienced in 1911. Different means have been adopted with the idea of persuading people to notify the Health Department of their change of address. Stamped post cards have been given to each case, the only necessity being to write the new address on the card and post it, but even this has been a failure. The most effective method of discovering removals is by frequent visitation. It is not an easy matter to persuade the people who have entered a house lately vacated by a phthisis patient to have the house disinfected, especially if they happen to have been in the house a few weeks. Moreover, one has to consider the landlord. It is quite possible that the new tenants may be frightened and leave the house when they are acquainted with the circumstances, in which case the landlord would, of course, be deprived of a tenant. It is an easy matter if the house left by a phthisis patient has not been re-occupied.

“In June last it was reported to the Health Committee that the typhoid ward at the hospital had been unoccupied for some months, and, since the number of notifications of typhoid had very greatly decreased in recent years, I recommended the use of the ward for the treatment of early cases of consumption, children to be preferred. This scheme was approved of by the Council, and since the opening of the ward 15 cases have been treated. All the cases were considerably improved by their stay, and left the hospital apparently quite well. Unfortunately, in December the use of the ward for this purpose had to be temporarily discontinued, but at the time of writing, cases of consumption are again being admitted.

Result of Enquiries—Family History:—

In 76 instances no previous history of Phthisis among actual members of the family could be ascertained.

„ 28	„	1 member of the family (or immediate relatives) had died of Phthisis.
„ 11	„	2 „ „ „ „
„ 6	„	3 „ „ „ „
„ 1	„	4 „ „ „ „

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"These figures show that a history of a previous death in a family from phthisis occurred in 38.0 per cent. of the cases.

"The foregoing Table has reference to 122 persons, and includes notifications as well as deaths of phthisis patients. It excludes reference to "repeat" notifications in 1911.

"One glaring instance of family infection should be mentioned. One sister and two brothers have died of phthisis in the last three years, and another brother is now affected. When the first of these cases came under my notice all this family slept together in one room, with no ventilation whatever. Not only would the window not open, but a sandbag was laid across it to prevent the possibility of any air getting into the room. That all the family should have been infected under the circumstances is a matter of no surprise.

"Enquiries also showed that in 18 instances other members of the family were at present suffering, or supposed to be suffering, from phthisis. In a few instances no information as to family history could be ascertained.

"*Commencement of Illness.*—Enquiries have also been made with a view to ascertaining the probable date of onset of the disease.

In 46 instances the illness *was said* to have commenced less than
a year prior to notification or death.

„ 18	„	between 12 and 18 months	„	„	„
„ 8	„	„ 18 months and 2 years	„	„	„
„ 20	„	„ 2 and 3 years	„	„	„
„ 12	„	„ 3 and 4 years	„	„	„
„ 6	„	„ 4 and 5 years	„	„	„
„ 2	„	„ 5 and 6 years	„	„	„
„ 4	„	„ 6 and 7 years	„	„	„
„ 2	„	„ 7 and 8 years	„	„	„
„ 3	„	„ 8 and 9 years	„	„	„
„ —	„	„ 9 and 10 years	„	„	„
„ —	„	„ 10 and 11 years	„	„	„
„ —	„	„ 11 and 12 years	„	„	„
„ 1	„	„ 20 and 21 years	„	„	„

“In the remaining instances the date of commencement of illness could not be ascertained.

“*Alcohol*.—The enquiries with respect to the use or abuse of alcohol in each case gave the following results:—

Intemperate, or heavy drinkers	...	21
Moderate drinkers	...	55
Abstainers	...	49
Not ascertainable	...	11

“*Habits*.—Enquiries were made in each case as to the “tubercular” habits of the patients, viz., whether the sputum was burnt, and whether due precautions were being taken to prevent the infection of others. In 8 instances the patients were said to be of dirty habits, in 8 fairly clean, whilst in the remaining cases, so far as could be ascertained, the patients took every precaution.

“Advantage is taken of the visits to houses where consumptives live to thoroughly inspect the premises and to have all the sanitary defects remedied and necessary repairs carried out.

“The sanitary conditions prevailing were as follows, the points particularly noted being whether the houses or rooms were dark, damp, or dirty:—

“In 12 instances the houses were damp or dark, or both, and in 3 instances were dirty.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“I received 23 notifications of pulmonary tuberculosis under the Tuberculosis Regulations, 1908, and all of the patients to whom these notifications referred underwent a course of treatment more or less prolonged in the Sanatorium or Phthisis Wards of the Clatterbridge Infirmary. The family history, surroundings and general conditions of life of all these persons were closely investigated. In three instances more than one member of the same family were undergoing treatment at the same time. Your Council considered a representation by me of the prevalence of tuberculous disease in the district, and authorised the printing and distribution of posters and handbills couched in the very simplest language giving instructions on pulmonary tuberculosis.”

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HALE URBAN DISTRICT.—“During the year the medical men of the neighbourhood were circularised and asked to voluntarily notify cases of phthisis, for which notification a fee of half-a-crown was offered, but none were notified in this way.”

HOOLE URBAN DISTRICT.—“The only available accommodation in the district for the hospital treatment of cases is in the Chester Union Hospital, where there are two wards set aside for that purpose, one for males and the other for females, and two day rooms. There were eleven deaths in the Union Hospital certified as due to pulmonary tuberculosis.”

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—“Two cases were notified under the 1908 Regulations. They were both treated in the Sanatorium provided by the Poor Law Authorities at Clatterbridge. One died and the other is still in the Sanatorium. The Delamere Forest Sanatorium is available for persons who can pay a moderate fee, provided that they are successful in obtaining admission, for the Sanatorium staff select cases to fill the vacancies with very great care. Early cases only are chosen, or at least, only those whose condition is such that a favourable prognosis is warranted. For persons unable to pay, accommodation is offered at Clatterbridge.”

LYMM URBAN DISTRICT.—“From January, 1912, tuberculosis has been made a compulsorily notifiable disease. Apart from many other important reasons, this will certainly emphasize the fact to the public that tuberculosis is really and essentially an infectious disease, and that for its prevention, treatment and cure, like other infectious diseases, it needs the intelligent co-operation of the people themselves. What we are doing in this district is to distribute information as to the isolation and treatment of such cases as may or must be treated at home, and to obtain sanatorium or hospital treatment for as many suitable cases as we are able. For hospital treatment we have to rely on the Union Hospital at Knutsford and for special sanatorium treatment upon the Crossley Sanatorium at Delamere, which can only take a fair proportion of our cases, as it drains so wide an area. I think however that in a country district like Lymm we are able to treat adequately at home a considerable number of cases that in a large and densely populated town would need sanatorium treatment. Meantime we must say however that with the exception of the Union Hospital, to which only the very poor can claim a right of admission, we have no public institution or dispensary where, as a right, we can send or treat our phthisis cases, either in the early, intermediate or advanced stages.”

MOTTRAM URBAN DISTRICT.—“The tuberculosis regulations came into force January 1st, 1912, and it is well that the general public should have an idea what they mean. I consider it one of the greatest measures in the prevention of the disease that has been introduced. If carried out with tact and discretion it will not only be a boon to the patients, but to the community at large. Consumption is just as infectious as scarlet fever. There is a well-known case of a clerk in an office affected with the disease. In turning over the ledger leaves he used to wet his finger on his tongue. He left, and the next clerk contracted consumption; two others followed, and they caught the disease. It was then discovered that the pages of the Ledger were infected with the tubercle bacillus.”

NESTON & PARKGATE URBAN DISTRICT.—“There is no public accommodation for cases of this disease unless sufferers care to avail themselves of the Infirmary of the Wirral Board of Guardians, where a sanatorium for men containing 25 beds has been built and where 15 women can be treated in a special ward.”

“The Liverpool Sanatorium at Delamere Forest, is utilised by selected cases of tuberculosis. Free tickets and also others at a small monthly payment are in the possession of your Medical Officer for distribution, through the kindness of a philanthropic lady who lives in this district. There are several persons who received treatment at Delamere as long ago as 1905 who are well and doing their ordinary work.

“The only notification in force of the above named affection has been up to the present time under the Poor Law Regulations of 1908. The Medical Officer has visited the homes of infected persons and has advised them with regard to Sanatorium treatment and general conduct. The houses have been thoroughly disinfected after the removal or death of the patients.

SALE URBAN DISTRICT.—“The houses in which cases of phthisis existed were visited and advice given as to isolation of the patients, management of the sickroom, and the care to be taken to prevent infection of the healthy occupants with the disease. In case of death the rooms were disinfected in the usual way.”

SANDBACH URBAN DISTRICT.—“There have been 7 deaths in the District and of people belonging to the District, from phthisis during the year. The poor are sent by me to Arclid Infirmary where they are fed on proper lines, isolated, and given plenty of

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fresh air day and night. Others than the poor have at present nowhere to go, but as the notifications are now compulsory the number of cases will be more noticed, and I have no doubt something will be done in the matter of Hospital accommodation. In the meantime I will supply disinfectants and give instructions at the infected houses."

WILMSLOW URBAN DISTRICT.—"Three cases of pulmonary tuberculosis were notified under the Tuberculosis Regulations, 1908 (cases in Poor Law Institutions or under care of District Medical Officer), and 1 under the Tuberculosis Regulations, 1911 (cases in hospitals).

"The houses were inspected, advice given, and disinfection carried out where necessary. Enquiries were made as to the existence of earlier unrecognised cases in association with the notified cases.

"The only hospital accommodation for advanced cases is in the Bucklow Union Workhouse, which also provides four open-air shelters for early cases. Early cases have also been treated at the Manchester Consumption Hospital, which has sanatoria at Bowdon and Delamere. The Council has no arrangement with the Hospital."

NANTWICH RURAL DISTRICT.—"Sixteen deaths were ascribed to pulmonary tuberculosis. This is equivalent to a death-rate of 0.6 per 1,000 living at all ages. The rates for the preceding nine years were 0.6, 0.33, 0.3, 0.6, 0.8, 0.7, 0.3, 0.5, and 0.49. These rates, though low, are capable of improvement, and I hope with the new means of prevention now to be applied, that a considerable reduction will be brought about.

"Nine deaths were ascribed to tubercular diseases other than phthisis. The numbers for the preceding two years were respectively eight and four.

"There is no provision as yet in the District for the treatment of early cases of consumption, and none for advanced cases, except the Workhouse Infirmary. The mortality from this disease is a serious one, and no future progress in the prevention of the disease can be made until some means can be found for the isolation of advanced cases among poor people away from their own homes, which generally are quite unsuitable for the treatment of such cases without grave danger to the other inmates of the house. The Joint Hospital Board possess quite

OTHER TUBERCULAR DISEASES.
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sufficient land at Worleston for the erection of a Consumptive Ward if it was thought well to provide such accommodation."

The other reports do not contain any allusions of special interest under this heading.

Other Tubercular Diseases.

In this group one includes tuberculosis affecting the lymphatic glands, bones, meninges or covering membrane of the brain, the peritoneum or lining membrane of the abdominal cavity, and tuberculosis of general systematic distribution. Tuberculous meningitis is scheduled in a separate column, and is responsible for 100 deaths out of this total. During 1911 there were 273 deaths ascribed to one or other of the above-named diseases, a number equivalent to a death-rate of 0.39 per thousand persons living. This is slightly above the record for 1910, but shews a decrease on the figures for previous years, for in 1909 the rate was 0.42, in 1908 it was 0.47, in 1907 it was 0.46, and in 1906 it was 0.47.

Cancer and Malignant Disease.

There were 661 deaths due to these various forms of disease during 1911—a number equal to 0.96 per thousand persons living.

The number of deaths varied from 257 in the 7 Municipal Boroughs to 229 in the 35 other Urban Districts and 175 in the 12 Rural Districts. Statistics in this County are only available as far back as 1900. It is not possible to give what is termed the corrected cancer death-rate, *i.e.*, the proportion of deaths from cancer to persons aged 35 years and upwards (in which class of person about 95 per cent. of the total deaths occur). The deaths are therefore perforce expressed as a rate per thousand of the total estimated populations. The figures are as follows :—

DEATHS PER 1,000 OF THE ESTIMATED POPULATION.

Year.		Cheshire.		England and Wales.
1900	...	0.70	...	0.829
1901	...	0.90	...	0.842
1902	...	0.74	...	0.844
1903	...	0.79	...	0.872
1904	..	0.79	...	0.877

CANCER AND MALIGNANT DISEASE.

Year.		Cheshire.		England and Wales.
1905	...	0.77	...	0.885
1906	...	0.85	...	0.917
1907	...	0.83	...	0.909
1908	...	0.84	...	0.923
1909	...	0.86	...	0.952
1910	...	0.84	...	—
1911	...	0.96	...	—

Certain facts stand out clearly from the mortality figures given by the Registrar-General (Supplement to 65th Annual Report).

In the decennium 1891-1900 the death-rates in England and Wales from cancerous disease at all ages and in both sexes averaged 758 annually per million persons living, thus exceeding by nearly 26 per cent. the average death-rate in the preceding decennium. From the year 1851 down to the present time cancer has shown a steady and persistent increase. During the 40 years 1851-1900 the cancer death-rate amongst males has trebled and amongst females it has doubled. A large amount of this increase is due to the more frequent detection of cancer as the result of operation or of post-mortem examination,—in other words to the more favourable opportunities for correct diagnosis available in recent years.

The recommendation of the Registrar General is that under the heading of cancer Medical Officers of Health should enter deaths from carcinoma, scirrhus, endothelioma, epithelioma, perithelioma, rodent ulcer, sarcoma, cancer, malignant disease, &c., and these should be further classified or assigned to *the part primarily affected*, or, if two or more organs are mentioned without the duration being given, to the one first stated.

It should be no difficult matter for Medical Officers to classify such deaths, *e.g.*, as due to cancer (1) of the buccal cavity, (2) stomach, liver, &c., (3) peritoneum, intestines and rectum, (4) female genital organs, (5) mammae, (6) skin, (7) various other organs, such as glands, kidney, larynx, pancreas, spleen, &c., and group separately such things as disseminated cancer, general carcinomatosis and sarcomatosis, multiple cancer, &c.

Although there is nothing very definite to announce at present as to the causative agent or agents of cancer the strenuous

DEATH-RATES FROM CANCER AND MALIGNANT.

DISEASE 1901-1911.

1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911.



CANCER AND MALIGNANT DISEASE.
ALCOHOLISM AND CIRRHOSIS OF THE LIVER.

investigations of the past ten years have certainly narrowed down the problem to a pronounced extent. Numerous ideas promulgated on much too slender ground have been proved fallacious. The issue is at present being narrowed down by a consideration of all and every circumstance peculiar to each case no matter how remotely connected they may at first sight appear. This may bring to light at any rate practices and habits which (to quote the words of Dr. Bashford, of the Imperial Cancer Research Fund) are "insults to the human body." The researches up to the present have gone far to shew that the disease is almost entirely an acquired one and therefore avoidable under conditions which are not yet all known.

Dr. Bashford and his colleagues have established the fact that animals suffering from cancer can and do cure themselves of the disease though by what precise mechanism or means is not yet known. If this part of the problem should be elucidated it will go very far towards paving the way for the establishment of a cure for the disease in man. The outlook appears distinctly hopeful but the public should wait for some thoroughly authenticated scientific pronouncement before placing the smallest reliance on any so-called "cure."

Alcoholism and Cirrhosis of the Liver.

There are 85 deaths ascribed to these causes of death, namely, 24 in the 7 Municipal Boroughs, 36 in the 35 other Urban Districts, and 21 in the 12 Rural Districts. As remarked in previous Reports, however, this is no criterion of the effects of alcoholism, for in the first place, the true cause of death is frequently not put on record, and, secondly, alcohol taken immoderately exerts an effect on practically every organ of the human body, inducing or hastening death from many other causes than cirrhosis of the liver.

Charles Dickens, in 1848, criticising George Cruickshank's well-known plates "The Drunkard's Children—a Sequel to the Bottle," makes the following strong comments on the relation of alcoholism to environment:—"Drunkenness, as a national horror, is the effect of many causes. Foul smells, disgusting habitations, bad workshops and workshop customs, want of light, air, and water, the absence of all easy means of decency and health, are commonest among its common, every day, physical causes. The mental weariness and languor so induced, the want of wholesome relaxation, the craving for *some* stimulus and excitement, which is

ALCOHOLISM AND CIRRHOSIS OF THE LIVER—DISEASES AND ACCIDENTS
OF PARTURITION—PUERPERAL FEVER—APPENDICITIS AND ALLIED
DISEASES—VIOLENT DEATHS AND SUICIDES.

as much a part of such lives as the sun is ; and, last and inclusive of all the rest, ignorance, and the need there is amongst the English people of reasonable, rational training, in lieu of mere parrot education, or none at all ; these are its most obvious moral causes. It would be as sound philosophy to issue a series of plates under the title of 'The Physic Bottle,' or 'The Saline Mixture,' and tracing the history of typhus fever by such means, to refer it all to the gin-shop, as it is to refer drunkenness thither and to stop there. Drunkenness does not begin there. It has a tceeming and reproachful history anterior to that stage ; and at the remediable evil in that history, it is the duty of the moralist, if he strikes at all, to strike deep and spare not."

Diseases and Accidents of Parturition.

The deaths from this group of diseases amounted to 58 during 1911, a decrease of 4 on the number recorded for the previous year. As previously remarked one as here to consider not only the deaths but the number of women incapacitated for home and other duties by illness which in many cases might have been avoided by proper medical and hygienic treatment during pregnancy and confinement.

Puerperal Fever.

The deaths from this disease numbered 16 during the year in the Administrative County, the number of cases of the disease notified to District Medical Officers of Health being 51 during the same period. The fatality rate is thus seen to have been a distinctly high one, namely 31.37 per cent. Further allusion is made to this subject in the section dealing with the Midwives Act.

Appendicitis and Allied Diseases.

There have been 58 deaths ascribed to this group of diseases.

Comparisons with the records of previous years are not possible as the classification of causes of deaths have been altered this year, and this group of diseases does not appear in previous records.

Violent Deaths and Suicides.

These have numbered 332, viz. :—254 deaths by violence and 78 suicides.

Death Certification.

The Registrar-General in December, 1911, issued a Manual dealing with the Causes of Death and containing a list of causes of death adopted for use in England and Wales based on the second decennial revision by the International Commission of Paris. The object of the publication is to define the headings of the Mortality Tables in the Registrar-General's Annual Reports and "to enable Medical Officers of Health to prepare local Tables on lines uniform both with each other and also with those recently laid down for use in the General Register Office." I reproduce from this Manual certain suggestions to medical practitioners contained therein respecting Certificates of Causes of Death. These will well repay careful consideration by all medical practitioners.

"General Register Office,
Somerset House, London,
October, 1911.

"It is highly desirable that medical practitioners should use, in their certificates of death, only those terms which are recognised in the nomenclature of the Royal College of Physicians of London. When this is done no difficulty is met with, generally speaking, in referring deaths to their proper heading in the International list of causes of death, as now adopted for use in the Registrar-General's Reports.

"In cases where an indefinite term has to be employed because more definite information is lacking it would be well to indicate this fact in the certificate. The word "idiopathic" will be understood as indicating that the probable cause of the condition stated is unknown, *e.g.*, idiopathic atrophy, idiopathic convulsions, idiopathic peritonitis, &c.

"By "primary cause of death" is meant (in the case of deaths from disease) the disease, present at the time of death,* which initiated the train of events leading thereto, and *not* a mere secondary, contributory, or immediate cause, or a terminal condition or mode of death.

"A *terminal condition* or *mode of death* should not be entered as a secondary (or contributory) cause. In a very large proportion of instances the statement of the primary

* Acute specific diseases, if of recent occurrence, are to be considered the primary cause of death, even though the actual disease, as tested by power of infection, be no longer present at the time of death, *e.g.*, measles (primary), five weeks; broncho-pneumonia (secondary) ten days.

DEATH CERTIFICATION.

cause gives all the information required; in these cases nothing is gained by adding as a secondary cause such a condition as syncope, heart failure, coma, exhaustion, &c. Thus a certificate of pulmonary tuberculosis is not improved by addition of "exhaustion" as a secondary cause, though if a complication such as "pneumothorax" had supervened this should be noted as a contributory cause of death.

"The Registrar-General will always be grateful to receive direct communications containing information as to causes of death which was not available when the certificate was issued. These should be addressed to the Superintendent of Statistics, General Register Office, Somerset House, London, W.C., and require no stamp. Such information will not be incorporated in the record of the certificate, but will often be of the utmost value for statistical purposes. If this course were adopted when the precise cause of death can be stated (in the light for instance, of a post-mortem examination or of a microscopic or bacteriological investigation), many indefinite certificates could be correctly classified. In all cases where the cause of death given in the certificate has been verified by a post-mortem examination, the letters P.M. should be added.

"In addition to the foregoing general considerations, the following points as to special causes of death call for attention:

"(a) *Small-pox*.—In certifying a death from small-pox, the patient's condition with respect to vaccination should be carefully stated—say, in one or other of the following forms: (1) No evidence of vaccination. (2) Vaccinated in infancy only—number of scars. (3) Vaccinated only after infection by small-pox. (4) Stated to have been vaccinated, but no scars. (If the patient has been re-vaccinated, the date should be given when possible).

"(b) *Cancer*.—Attention is particularly directed to the request that the seat of primary occurrence should be returned in all cases where known.

"(c) *Diarrhœa*.—When this is due to improper feeding, or to any kind of food infection, the fact should be mentioned in the certificate. The Royal College of Physicians having condemned the use of the terms "*gastro-enteritis*," "*muco-enteritis*," and "*gastric catarrh*," as alternatives for the authorised term "*infective enteritis*," it is hoped that the use of these italicised terms will be entirely discontinued.

“(d) *Childbirth*.—Whenever parturition or miscarriage has been in any way a contributory cause of death, the fact should be mentioned on the certificates. Always qualify all diseases resulting from childbirth or miscarriage as puerperal, *e.g.*, puerperal septicæmia, puerperal peritonitis, &c.

“(e) *Violence*.—The term violence is understood as including all deaths from unnatural causes (including anæsthetics and poisons of all forms) whether accidental, suicidal, or homicidal.

“It is rarely the duty of medical practitioners to issue certificates in the case of deaths from recently sustained violence, but it must be borne in mind that if a coroner declines to hold an inquest upon such a death a medical practitioner who has attended the deceased is bound by section 20 of the Births and Deaths Registration Act, 1874, to give a certificate of the cause of death. When certifying deaths from violence which have not already been reported to the coroner (*e.g.*, from paraplegia due to violence sustained many years before death), medical practitioners should advise the friends of the deceased to inform that official forthwith.

“The following suggestions as to the form of certification of violent deaths are extracted from the Registrar-General's Circular to His Majesty's Coroners (1911):—

“In every case of death by violence or by suspected violence, whether the death resulted from the violence itself or from a pathological state induced by it, the verdict should state the form and means of violence, its accidental, suicidal or homicidal nature, and the nature of the injury, *e.g.*, fracture of skull (*nature of injury*) due to being *accidentally* run over (*form of violence*) by a motor car (*means of violence*).”

“(f) *Operation*.—In all cases where an operation has been performed for the disease or injury causing death, the operation, as well as the disease or injury for which it was performed, and any secondary conditions contributory to death and resultant from the operation, should be mentioned on the certificate. The interval between operation and death should also be recorded.”

Transferable Deaths.

The Registrar-General has just adopted a new system for securing the proper distribution of deaths of persons who die in some other district than that to which they really belong, and

TRANSFERABLE DEATHS.

has, by consent, adopted the office of the County Medical Officer of Health as the clearing-house for this purpose. This has involved a considerable addition to clerical work, but there is no doubt that this system is the simplest in operation. The general rules observed in dealing with these transferable deaths are given herewith.

“Transferable Deaths” are deaths of persons who, *having a fixed or usual residence in England or Wales* die in a district other than that in which they resided. The deaths of persons without fixed or usual residence, *e.g.*, casuals, are not “transferable deaths” except as provided in 3 (b) below.

The following special cases arise as to transferable deaths :—

1. Persons dying in institutions for the sick or infirm, such as hospitals, lunatic asylums, workhouses, and nursing homes (but not almshouses), must be regarded as residents of the district in which they had a fixed or usual residence at the time of admission. If the person dying in an institution had no fixed residence at the time of admission, the death is not transferable. If the patient has been directly transferred from one such institution to another, the death is transferable to the district of residence at the time of admission to the *first* institution.

Note.—An institution belonging exclusively to the whole or a part of a particular urban or rural district, but situated outside that area, is regarded by the Registrar-General for the purposes of death transference as situated in the area in which it belongs.

2. The deaths of infants born and dying within a year of birth in an institution to which the mother was admitted for her confinement shall be referred to the district of fixed or usual residence of the parent.
3. Deaths from violence are to be referred :—
 - (a) to the district of residence, under the general rule ;
 - (b) if this district is unknown, or the deceased had no fixed abode, to the district where the accident occurred, if known ;
 - (c) failing this, to the district where death occurred, if known ; and
 - (d) failing this, to the district where the body was found.

Section III.—Infectious Disease.

The extended Table at the end of this Report shews the number and nature of the cases of infectious disease notified in the Administrative County during 1911. There were 4,152 notifications received by the District Medical Officers of Health as follows:—

Small-pox	...	...	...	34
Diphtheria and Membranous Croup				799
Erysipelas	...	...	...	391
Scarlet Fever	...	...	...	2316
Typhus Fever...	...	...	...	1
Typhoid Fever	..	...	...	251
Continued Fever	...	...	...	8
Puerperal Fever	...	...	...	51
Pulmonary Phthisis	..	...	...	301

Small-pox.

Of recent years this has most fortunately been a rare visitor in this County but he would be a bold man who ventured to prophesy any prolonged extension of this exemption. When the disease does arrive in true epidemic form it is safe to assert that it will find its chief victims as usual in the increasingly large body of persons unprotected by vaccination. One may expect, however, that as usual during such times those who have shouted most loudly in the cause of anti-vaccination will be amongst the first to scurry round to their family doctors to be vaccinated. Much the same conditions prevail in my experience (which is no small one in this connection) during a small-pox epidemic as during a tragedy at sea—those who have exhibited surface boldness in the saloon on a smooth sea are the first to fight their way to the boats.

The following are notes by the District Medical Officers of the few cases which have occurred during the past year:—

CONGLETON MUNICIPAL BOROUGH.—“The case of small-pox was that of a man who lived in Astbury Street, and worked and lodged in Staffordshire during the week, coming home for the week-end. He had been well primarily vaccinated on joining the navy four years ago, and had a mild attack of

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discrete small-pox. He was removed to the small-pox hospital at Arclid as soon as his condition was discovered, and the inmates of his house, 4 persons, ranging in age from 10 to 22 years who had been in contact with him for 2 or 3 days of his illness were re-vaccinated. Five other contacts in Congleton, including a 3 months' un-vaccinated baby, declined vaccination or re-vaccination and were kept under observation for 17 days."

DUKINFIELD MUNICIPAL BOROUGH.—"Four cases of small-pox were notified during the year. Of these four cases of small-pox the first was notified on February 20th. A man aged 42, a mild attack, who had been vaccinated, 3 marks $\frac{2}{3}$ of an inch in area.

"The second case was notified on February 28th. A girl aged 14, unvaccinated, a severe attack.

"The third case was notified on March 12th. A woman aged 36, vaccinated, 2 marks one inch in area. This was a mild case.

"The fourth case was notified on March 20th. A man aged 60, one mark $\frac{1}{2}$ inch in area. This was also a mild case.

"All these cases were removed to the Hyde Hospital and recovered."

STALYBRIDGE MUNICIPAL BOROUGH.—"The Borough had remained free from this disease from the summer of 1906, when there were 3 cases, until early in this year, 1911, when an outbreak took place.

"The following report prepared at the request of the Local Government Board give the history of the outbreak and the steps taken to check and eradicate the disease.

"On Saturday evening, February 25th, 1911, I was requested by Dr. Williams to see a woman, N—— H——, at 3, Calvert's Yard, Quay Street, as he was suspicious concerning her ailment. I accordingly saw her along with Dr. Williams; but as the slight and modified rash was in the early stage of its development I decided to see her again before pronouncing the case to be small-pox. She was nursing her baby, which was four months old, had not been vaccinated, and was free from disease.

"I again visited her the next day (Sunday), and was satisfied that it was small-pox from which she was suffering.

"Upon careful inquiry I then ascertained that the baby had been nursed during the daytime—while the mother was at work—at a house, 13, Bayley Street, the back door of which opened into Calvert's Yard, and that at this house a boy of eleven years of age had recently recovered from an attack of supposed chicken-pox, and that this boy's father and mother also had had "similar spots" about them, and were supposed to have had slight attacks of chicken-pox.

"Early in the afternoon of this same Sunday, February 26th, 1911, my attention was called by Dr. Howe to another case at 52, Set Street, whereupon I visited the house and found a woman, M—— H——, suffering from small-pox.

"I at once set about to have these two cases removed as soon as possible to the Ashton-under-Lyne and District Small-pox Hospital at Hartshead; and through the prompt action of Mr. Alderman Shaw, Chairman of the Joint Hospital Board, in arranging for the immediate opening of the hospital, I was enabled to send these two patients to the hospital within a few hours.

"A third case was notified to me by Dr. Fox, on Tuesday, February 28th, 1911—a widow, H—— W——, living by herself next door to the first case in Calvert's Yard. She was straightway removed to the hospital.

"On Thursday, March 2nd, 1911, I paid a house-to-house visit in the neighbourhood of Calvert's Yard, but found nothing to arouse my suspicions except that the replies I got to my enquiries at 9, Quay Street were not altogether satisfactory. However, I was obliged to accept them at the time, but the next day my attention was drawn to the inmates of this house, so I paid a sudden and unexpected visit, and upon entering I immediately saw the wife of the occupier unmistakably suffering from small-pox, and I at once ordered her removal to hospital.

Origin of these four cases.

"All the four cases arose from association with the inmates of 13, Bayley Street, where the cases of supposed chicken-pox had occurred, and which upon investigation I found to have been undoubted cases of small-pox.

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Case No. 1.—N—— H——, of 3, Calvert's Yard, Quay Street. Baby nursed at 13, Bayley Street, the mother going to and fro.

Case No. 2.—M—— H——, of 52, Set Street. Frequently visited the inmates of 13, Bayley Street.

Case No. 3.—H—— W——, of 2, Calvert's Yard, Quay Street. Had recently left her door-key with those at 13, Bayley Street, who had also been in and out of her house frequently during the preceding few weeks.

Case No. 4.—E—— A—— S——, of 9, Quay Street. A daughter-in-law of those at 13, Bayley Street, and frequently in and out of each other's homes.

Means adopted to prevent the spread of the Disease.

"The sufferers were removed to hospital as soon as possible.

"The members of each household affected were taken down to the disinfecting station, where their clothing was put through the steam disinfecter, while they had a good bath, after which they re-dressed. In the meantime, the infected bedding, &c., were removed from the dwelling ready for disinfection in the steam disinfecter, and the dwelling was thoroughly fumigated ready for the occupants to return home.

"The members of each household were then re-vaccinated by their own medical attendant with lymph supplied by the Medical Officer of Health, and at the expense of the Corporation, when they were allowed to go about and even to resume their usual occupations, but they were kept under strict observation for the ensuing fourteen days.

"These means proved most efficient in checking further progress of the disease, for not another case arose in any of the affected households after the first case had been recognised.

"I endeavoured to find out how the boy at 13, Bayley Street, who first was seized with the supposed chicken-pox, had contracted the disease; but I have not been able to definitely trace its origin, though I am of opinion that he, being unvaccinated, contracted it from some other case of supposed chicken-pox, the true nature of which had been overlooked; and events such as this most decidedly point to the desirability

of adding chicken-pox to the list of diseases compulsorily notifiable."

"On March 22nd, 1911, I reported that "no case of small-pox has been brought to my notice since March 3rd, and we may now regard the Borough as free from the disease."

"On March 28th the four cases resulting from the outbreak of small-pox in Calvert's Yard, Quay Street, were discharged from hospital.

"Nothing more transpired until Easter Monday, April 17th, when between five and six o'clock in the evening I was informed by the Police that a woman had been to the Police Office to say that neighbours were suspicious of a woman living at the bottom of Leech Street suffering from small-pox; and very shortly afterwards I was asked by Dr. Clifford to see a suspicious case in Lindsey Street. Accordingly, I went first to see Dr. Clifford's case, which we agreed to see again the following morning; and then I went on to see the woman at 2, Kirk's Yard, Leech Street, and found her to be suffering from small-pox, so I gave the inmates all necessary instructions, as I could not get at our officials that night. The following morning I again went with Dr. Clifford to see his case; and, being quite satisfied that it was small-pox, I at once made arrangements for the immediate removal of these two cases to hospital.

"The following Friday, April 21st, Dr. Rodocanachi asked me to see a woman at 29, Cross Leech Street, whom he suspected of having small-pox, of which I was fully satisfied the following morning, April 22nd, when I had her removed to hospital.

"Now, these three cases had originated within a few days of each other, were widely separated from each other, and gave not the slightest information to connect them with one another or with the outbreak in Calvert's Yard, Quay Street, nor could any indication as to the origin of any one of the cases be elicited; and I had to rest content with removing the affected persons and dealing promptly with the contacts and the premises.

"It was not long, however, before the whole matter was cleared up, though in quite an unexpected manner.

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"During the afternoon of April 24th a woman came to my surgery and told me there were several members of a family in Burton's Yard, Cross Leech Street, suffering from small-pox, and I ascertained from her that "a doctor was going to the house." Very shortly afterwards Mr. Bradbury, the Sanitary Inspector, informed me he had just met a man, T—— D——, who, on the morning of March 13th, went to Dr. Fox's surgery, and, being suspected of suffering from small-pox, was ordered to go home—Burton's Yard, Cross Leech Street, was the address he gave—and wait there until I called to see him. He did not, however, wait until I was able to call and see him; but he consulted another doctor. I interviewed this doctor, and was assured by him that the man was not suffering from small-pox; and, being unable to ascertain the whereabouts of the man, I was perforce compelled to await events.

"The Sanitary Inspector visited 3, Burton's Yard, and found that it was this man's family who were said to be suffering from small-pox; so later on I went there and saw J—— D—— (19), A—— D—— (13), and B—— D—— (3), and the next morning these three, along with T—— D—— (15), and A—— S—— (2), of 1, Burton's Yard,—a cousin of the other four, of whom nothing had been said the previous evening—were sent off to hospital.

"We also ascertained that a girl of 6, V—— D——, of No. 3, and a boy of 9, J—— B——, of No. 1, Burton's Yard, were at Castle Hall School that morning, so we proceeded to the school, had these two children sent home, and gave the headmaster instructions to at once close the school until further orders.

"During the evening of the same day, April 25th, Dr. Williams desired me to see the proprietress of the Forester's Refuge, and finding the case to be small-pox—though a mild attack—I arranged for her removal to hospital the same evening, so that this was the sixth case sent away that day.

"All whom we could find to have been contacts of the affected persons were visited, dealt with, and kept under observation; and fortunately no one developed the disease except the mother of the child, A—— S——, sent away from 1, Burton's Yard. She would not consent to be re-vaccinated until the afternoon of April 27th, although the child had been suffering from small-pox for some few days prior to discovery. The re-vaccination took well, but unfortunately not sufficiently

early to prevent her being attacked with a mild form of the disease, and on May 5th I ordered her removal to hospital.

“All the other contacts have escaped the disease, and the last of our patients was discharged from hospital on May 26th, so we may now consider the disease to have been thoroughly stamped out.

Origin of the Cases.

Case No. 5.—B—— D——, housewife, 35, of Kirk’s Yard, Leech Street. Eventually found to have been a frequent visitor in Burton’s Yard, and also to have acquired a bedstead from one of the affected households there.

Case No. 6.—A—— L——, schoolmistress, 45, of 19, Lindsey Street. Eventually found to have two children of one of the affected households in Burton’s Yard attending her department of the school; one of the two, B—— D—— (3 years), being frequently taken to school by an older sister, A—— D——, who was at the time suffering from the disease.

Case No. 7.—M—— H—— D——, housewife, 43, of 29, Cross Leech Street. Eventually found that the girl A—— D——, of 3, Burton’s Yard, was frequently in and out, and went errands for her.

Cases Nos. 8, 9, 10, 11 and 12.—J—— D—— (19), T—— D—— (15), A—— D—— (13), B—— D—— (3), children of the man T—— D—— who ought to have waited for me to see him on March 13th; and A—— S—— (2), a cousin of these four persons, and usually nursed during the daytime by A—— D——, even while A—— D—— was suffering from the disease.

Case No. 13.—A—— W——, proprietress of the Forester’s Refuge. Most probably had some direct or indirect association with the above group of cases.

Case No. 14.—E—— S——, mother of the child A—— S——, of 1, Burton’s Yard.

WALLASEY MUNICIPAL BOROUGH.—“There were 10 cases of small-pox notified during the year.

“The history of the outbreak is interesting, with a highly satisfactory conclusion.

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"On June 28th I was asked to see, in consultation, a person in Westminster Road, whom I found to be suffering from well-marked small-pox. No cases had occurred in the district for twelve months, and, as no contacts were under observation from the port, one was at first at a loss to find the source of infection. An examination, however, of the members of the family showed two people with distinct evidences of recent small-pox, namely, the patient's sister and father. The sister was an elementary school teacher, who was supposed to have suffered from chicken-pox. The father was a steward on board a steamship which had arrived at Tilbury on May 6th with a clean bill of health reported to the Port Medical Officer. It was subsequently discovered that one of the stewards on May 5th had been seen by the surgeon of the ship, who discovered on him a slight scarlatiniform rash, which, however, he did not think was anything of an infectious nature, but which was probably, as events have proved, a prodromal rash of small-pox. He went to his home, and on May 8th was diagnosed as suffering from small-pox. Several outbreaks of small-pox in different parts of the country have been traced to this man and his cabin companions, some of whom subsequently developed the disease at their different homes. It appears, moreover, that when the Port Medical Officer of London heard of the circumstances, he sent to the various authorities concerned, so far as could be ascertained, the names and addresses of the crew and passengers. This information could not possibly be so accurately ascertained as it would have been if the case had been discovered before leaving the ship. Very unfortunately, the particular man who resided in Liscard was notified to Liskeard, in Cornwall, and when he was not found there the fact was not retransmitted to London, with the result that I received no intimation whatever to watch any contacts, and discovered the case almost by accident. The man developed small-pox 12 days after arrival home, but did not see a doctor. His daughter, the school teacher, developed the disease on or about June 10th, and the rash of the second daughter, whom I went to see, appeared on or about June 25th. The usual precautionary measures in the way of re-vaccination of contacts, disinfection, &c., were carried out, and as the disease had evidently been in the district for about a month unrecognised, and the people had been walking about the streets in an infectious condition, it was exceedingly probable that someone or other had become infected, whom there were no means of tracing. I therefore sent a circular-letter to all the medical men in the Borough, pointing out the facts and asking to be apprised of any suspicious cases coming under their notice. Two mornings

following the receipt of the circular-letter by them, namely, July 4th, a girl was sent to me for an opinion as to the nature of her illness, which was suspicious of small-pox. It was an exceedingly mild form of the disease in a very early stage, and I was exceedingly doubtful as to the diagnosis until I visited the laundry where she informed me she worked, and found two people with a more or less typical small-pox eruption out on them. Work at the laundry was stopped, the premises and clothes were thoroughly disinfected, and the workers re-vaccinated. One of the workers was notified to me as being ill at home. I visited her and found her to be suffering from a malignant hæmorrhagic type of the disease. She, unfortunately, died. In the next few days two other members of the staff were removed to the hospital suffering from exceedingly mild attacks. Up to this time there was no evidence to connect the Westminster Road cases with the laundry, nor was there any clue as to how the workers at the laundry had become infected, except the fact that the proprietor's wife had recently died and that soiled linen had been sent to the laundry from the house where she resided. The death of the manager's wife was registered as due to peritonitis, and he, when interviewed, assured me that there was no eruption on his wife when she died. The doctor in attendance confirmed this, and in face of these denials one had to exclude that as a probable source of infection. On July 7th, however, I was again called in consultation to see a suspicious case in another part of the town. I then discovered that this patient was a sister of the proprietor of the laundry, and her eruption appeared exactly 15 days after a visit she had paid to the latter's wife. She, moreover, informed me that the wife *had* an eruption upon her when she died. I also discovered that one of the cases among the laundry workers had been a nurse girl at this house, and in fact had not worked at the laundry for some time. It was therefore evident that the infection was conveyed to the laundry by clothing from the proprietor's house. Subsequently two other cases occurred in the street where the manager's wife died, namely, one at the house next door, between which two houses there had been inter-communication; and the other at a house some 30 yards away, where there was no evidence of inter-communication. Neither was connected with the laundry in any way. No connection between the Westminster Road cases and the others could be traced, but since the two houses first infected are only about 50 yards apart (though not in the same street), and since the first two cases were never isolated and after a very short period of isolation mixed promiscuously with other people, and since

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no other cases were in the borough or in the vicinity, it is only reasonable to suppose that these cases were associated, though the association could never be ascertained.

"The last case was discharged from hospital on August 21st.

"Having regard to the fact that there were two sources of infection in the Borough unknown for so long, it is somewhat remarkable that the outbreak did not assume wider dimensions. Only two cases were notified by general practitioners; the remainder were found as the result of the observations and investigations of the health officials.

"During the year, apart from this outbreak, 219 contacts from ship cases have been kept under observation, but none developed the disease.

"Having regard to the alarm which the outbreak caused in the Borough, it may be as well to state that this Borough is always liable to be attacked with small-pox, owing to its proximity to Liverpool and to the fact that a very large number of seafaring people reside here. As a matter of fact cases of small-pox have occurred in Wallasey in three out of the last four years, but the disease has never spread. It is very desirable, therefore, that residents should see that their children are properly vaccinated in infancy, and re-vaccinated whenever occasion demands."

LOWER BEBINGTON URBAN DISTRICT.—"In June the district suffered from an outbreak of small-pox which fortunately was limited to 3 patients. It will be recollected that an outbreak of this disease occurred in 1910, the last case being notified in August of that year. On June 4th I was asked to see a patient at 8, Egerton Road, New Ferry, by Dr. Hill, who had been acting as Medical Officer of Health and was just relinquishing the office. This was a woman aged 32 years, with a well-marked attack of ordinary discrete small-pox. There were 11 persons resident in the house, 6 adults and 5 children. These persons were all related to one another, and stated in the case of 2 of the adults that their residence in New Ferry was only a temporary matter, and that they had already taken a house in Liverpool to which they were going in a day or two. The same steps were taken as on the previous outbreak, viz., removal of the patient to the isolation hospital at Greasby and transference of all other persons in the house to tents erected in a field at Pensby, which is an approved

site for a small-pox hospital. A list of names and addresses of persons who had recently visited 8, Egerton Road was obtained, and the Medical Officer of Health of Birkenhead was notified of the existence of two contacts; also 3 persons residing in New Ferry who were known to have been at the house were visited and consented to be re-vaccinated. This was done by the Public Vaccinator, who performed the same service for the 10 persons removed to the tents at Pensby. The operation was successful in each case, but on 14th June at one of my daily inspections of the contacts, a woman, aged 20 years, was found to have some suspicious spots. By the following day there was no doubt but that she had small-pox, although she exhibited 4 large sized mature vaccination areas. She was removed to the hospital at Greasby. On June 20th I was asked to see a man aged 28, at 4, Egerton Road; here also a diagnosis of small-pox was made, and he was removed to Greasby. The eruption in this case was hæmorrhagic, but the patient recovered. In addition to the patient 4 persons resided at 4, Egerton Road, viz., 2 adults and 2 children. They were re-vaccinated and conveyed to the tents at Pensby. The man was employed at a large shipbuilding yard in Birkenhead and his employers were notified. One person who had been at the infected house lived in Wallasey, the Public Health Authorities of which place were communicated with. 6 New Ferry persons were also known to have recently visited the infected premises, and they were kept under observation. A house to house visit was made to the persons residing in the same and a neighbouring street, but no other cases were detected. The Public Vaccinator re-vaccinated 25 persons. There had been some 500 re-vaccinations at the last outbreak. The original source of the infection was never discovered, and it is impossible to say whether the outbreak bore any relationship to that of 1910 or not. All the patients recovered. The contacts detained in the camp at Pensby were sent to their homes, which had been thoroughly disinfected and cleaned, after a 21 days' detention. The cost of maintenance was less than 1 shilling and 4 pence for each person per day. Apart from this camp it would have been a matter of very great difficulty to get the houses dealt with in a proper fashion. Your Inspector, with his experience of the previous year still in his memory, very rapidly and energetically organised the camp, and the limitation of the epidemic to 3 cases was probably due to the assiduity with which he worked."

CONGLETON RURAL DISTRICT.—"One case of small-pox occurred in a boat at Malkin's Bank, on the 17th of May, in a young man who was removed to the Small-pox Hospital

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at Arelid, where he soon recovered. Every precaution was taken to prevent the spread, the other inmates of the boat, his father and mother, were vaccinated, the boat fumigated with formalin, all the bedding burnt, the clothes burnt, and after detaining the boat a fortnight the captain and his wife were allowed to proceed. Information of this case having broken out was sent to the Medical Officers of Health up and down the canal through which this boat had been travelling, so that they might be on the look out for a similar case."

Diphtheria.

There were 799 cases of diphtheria reported in the Administrative County during the year: of these 371 occurred in the Municipal Boroughs, 283 in the 35 other Urban Districts, and 125 in the twelve Rural Districts.

The total deaths in the County from this disease numbered 88, viz.: 41 in the Municipal Boroughs, 19 in the other Urban Districts, and 28 in the Rural Districts.

The Boroughs of Crewe and Wallasey, the Urban District of Runcorn, and the Rural Districts of Congleton, Nantwich and Runcorn appear to have been the principal sufferers during 1911 from this disease. With the bacteriological assistance now available and the use of Antitoxin diphtheria outbreaks are, with the exception of those due to "carrier" cases, becoming fairly easy of control. Various conditions of the nose and throat which were formerly regarded as innocuous are now coming to be recognised as serious factors in causing the spread of diphtheria. Quite recently the condition known as fibrinous rhinitis has been shewn to be very frequently diphtheritic in character.

I append some details of the outbreaks on which certain Medical Officers have specially reported:—

CREWE MUNICIPAL BOROUGH.—"There were 86 cases notified during 1911.

"The age distribution of the cases and deaths was as follows:—

Age.	No. of Cases.	No. of Deaths.	Case Mortality.
Under 5 years	23	4	17.3
5-10	27	1	3.7
10-15	22	0	—
15-20	9	0	—
20 & over	5	0	—

“From the age distribution of the deaths recorded previously it is seen how much higher the case-mortality was among children under 5 years compared with those over that age.

“It is interesting to compare the case fatality of the patients treated at the Isolation Hospital and those treated at home.

Hospital Patients.			Home Patients.	
	No. of Deaths.	Case Fatality %	No. of Deaths.	Case Fatality %
1910	25	10.0	7	17.0
1911	4	5.2	1	10.0

“When it is remembered that the patients admitted to the hospital are at all stages of the disease and include the most acute cases in the Borough the results more than justify the policy adopted of isolating these cases at the hospital as expeditiously as possible.

“Throat and nose swabs from suspected and actual cases, home contacts, school contacts, and convalescents prior to discharge from isolation are examined. This is done so far as time will permit at the Municipal Laboratory and at other times at the Public Health Laboratory of Manchester University.

“During the year the specimens examined and the results were as follows:—

	No. Examined.	Result.			No. Growth.
		Positive.	Negative.	Doubtful.	
Municipal Laboratory	125	35	86	4	—
Manchester ,,	352	80	239	8	25

“The provision made to place bacteriological methods of diagnosis at the disposal of the medical practitioners in the Borough is one of the most valuable means of controlling the spread of the disease and of dealing adequately with the “carrier” problem.

“One of the conclusions arrived at by Dr. Macdonald when acting as Bacteriologist to the Corporation was that the “carriers” of diphtheria bacilli were much more numerous among the home contacts than among the school contacts. My own subsequent observations confirm this and lead me to add further, that before discharging convalescents from isolation

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it is as essential to establish the absence of diphtheria bacilli from the nose as from the throat. In persistent carriers I find the naso-pharynx the chief source of infection.

"The exclusion of "carriers" from school until free from the bacillus is essential. While adopting measures to detect and treat the germ "carrier," one must not lose sight of the environment in which the carrier lives. Here conditions may be found which render the person more susceptible to infection and predisposed to the disease."

WALLASEY MUNICIPAL BOROUGH.—"The incidence of the disease was below the average until the last quarter of the year, when the number of cases notified materially increased, and, moreover, the cases were of an exceedingly severe type. The autumnal outbreak was almost entirely confined to one district, and a large majority of the cases were amongst the children attending Manor Road School, which seemed to afford a clue as to the source of infection, but there was no special incidence in any particular class, and whenever a case occurred in a class previously infected, it occurred after an interval too long to support the view that a carrier or carriers were present. For instance, in the infants' department, the following Table shows the class affected, and the last attendance in school of the particular scholar:—

Class.	Last Attendance.	Class.	Last Attendance.
4	October 23rd.	...	2 December 15th.
5	October 31st.	...	4 December 15th.
4	November 10th.	...	1 December 21st.
4	December 8th.		

"So that between the cases occurring in Standard IV., intervals of 18 days, 29 days, and 7 days elapsed. No other class had two cases. In the boys' department a similar state of affairs existed:—

Class.	Last Attendance.	Class.	Last Attendance.
1	November 10th.	...	5 November 29th.
3	November 7th.	...	2 December 8th.
3	November 10th.	...	3 December 15th.
1	November 22nd.	...	1 December 21st.
			(2 cases)

"So that the intervals between successive cases in Class I. were 12 days, 29 days; Class III., 3 days, 35 days. With

one exception all the patients were boys. There were 2 cases notified in the senior girls' department, but they turned out to be ordinary tonsillitis.

"On two occasions I visited the schools and examined the children in the classes where cases had occurred, and took swabs of those presenting any signs of recent sore throat or nasal discharge. The reports on the swabs were all negative. Advantage was taken of the Christmas holidays to thoroughly disinfect the whole school, to destroy all pencils and pens, exercise books and other books of little or no value, modelling clay, &c., and to disinfect in a special apparatus the reading books which were in good condition. At the time of writing (three weeks after the re-opening of the school) no cases have occurred except one which was infected during the holidays, and, although several notifications of diphtheria have been received, none of them are in the district above mentioned or attend Manor Road School. I may observe that for the last two months in the year the weather was exceedingly damp and raw, and there were remarkably few days in which rain did not fall at some period or other, predisposing conditions eminently favourable to the development of throat infection, particularly among ill-shod children obliged to sit in school with wet feet.

"If any further evidence were needed as to the desirability of promptly injecting anti-toxin, this outbreak supplies that evidence, for in not one of the cases which died was anti-toxin administered before the third day, and in some instances even later. Many of the cases were admitted to hospital with intensely swollen tonsils and enlarged glands, and were of a type of the disease never before seen in this district.

"Anti-toxin can now be obtained free of charge by any medical man requiring it. The advisability of injecting anti-toxin in any suspicious case, even before a definite diagnosis can be made, has over and over again been urged, and since the anti-toxin is now supplied free, there is no valid reason why this should not be done much more frequently."

RUNCORN URBAN DISTRICT.—"Thirty-one cases of diphtheria were notified during the year. Thirty-four cases were notified during the previous year, a decrease of three. Twenty-six houses were affected. What was chiefly satisfactory about those notifications is that there were no deaths. I think we may safely assume that these cases were of an exceptionally mild type, and let us hope that this once terribly

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fatal disease has pretty well burned itself out. January, April and August were the three favourite months. No one particular part of the town was specially affected, the cases were pretty evenly distributed over the whole of the sanitary area.

“Of croup and membranous croup six cases were notified, and four cases were notified during the previous year, an increase of two. Two cases were notified from one house. Whether notified as croup or membranous croup, they are all classified under the head of membranous croup. Three of the cases were notified in September.”

CONGLETON RURAL DISTRICT.—“71 cases were notified; 28 were at Rode Heath and Thurlwood, Elworth 11, Tetton 2, Mount Pleasant 2, Mow Cop 2, Kent Green 3, Hassall 1, Scholar Green 7, Cranage 10, Smallwood 2, Bradwall 1, Lawton 1, Wheelock 1. Anti-toxin is supplied free of charge. I keep a supply and the Inspector also keeps a supply, so that in both sides of the District serum can be obtained without delay.”

NANTWICH RURAL DISTRICT.—“This disease was rather wide-spread during the year, and appeared in twenty-seven of the townships of the District as well as in the Union Workhouse. For most of the cases it was difficult to account. The cases reported from Audlem occurred in September, and although in clinical appearance they resembled diphtheria they were found bacteriologically not real cases of the disease.

“The notifications at Baddington were sent in in August and December and really referred to the same child, a little girl at Hack Green, whose case was treated at home owing to her parents not desiring removal to hospital. After her return to school cases of diphtheria began to occur amongst children attending the Sound Council School and living in the townships of Sound, Broomhall and Baddiley. She was found in December to have a nasal discharge which still contained the bacillus of diphtheria. As soon as the nature of her case was recognised she was isolated and energetically treated by her medical attendant until the discharge had cleared up and her nose was free from infection. Her case seems almost undoubtedly to have been the cause of a rather serious outbreak.

“The cases at Brindley occurred in one farm-house. It is probable that a member of the household had contracted the

disease in so mild a form as to be unrecognisable and had so infected the rest of the household.

“The cases at Willaston formed two distinct outbreaks, viz.:—one in the first four months and one in the last three months of the year. They appeared to be cases of school infection but I was unable to trace the actual causative case.”

RUNCORN RURAL DISTRICT.--Dr. J. Adams records that:—

“Diphtheria has been again more than usually prevalent, 61 cases having been notified, and resulting in 2 deaths, that is to say, a death-rate of 3.3 per cent. of cases notified. Last year (1910) 23 cases were notified and 1 death occurred, causing a death-rate of 4.3 per cent. of cases notified, an increased percentage of deaths of cases notified; but it should be understood by all medical practitioners in your district, that a free supply of anti-diphtheretic serum is provided to all medical practitioners attending such cases, on their personal application to me, certifying that the patients, or those in charge of the patients, are unable to afford the cost. There are no defects, so far as I have been able to ascertain, as far as regards the milk or water supplies in the affected areas. The largest outbreak occurred in Weston Point, where 33 cases occurred, resulting in 1 death.”

Scarlet Fever.

This disease has been somewhat less prevalent than during 1910. The number of cases reported has been 2,316 in the Administrative County, but only 29 deaths have been recorded, namely, 15 in the Municipal Boroughs, 10 in the other Urban Districts and 4 in the Rural Districts.

Only a few of the District Medical Officers have any special comments to make on this subject, and I reproduce the most interesting of these:—

CONGLETON MUNICIPAL BOROUGH.—“Sporadic cases of scarlet fever were common during the whole year, seldom more than a week or two passing without a fresh case, and it was only occasionally that the source of infection could be satisfactorily traced, but between 11th June and 23rd July there was a more serious outbreak of 30 cases, mainly affecting children attending the Mossley School. This was traced to two children who had recently had the disease in such a mild form that they were never really ill enough to be kept from school, and they were only discovered when desquamation was

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well advanced. There was no difficulty in isolating one of the two, but the other, with the knowledge of the parents, persisted in exposing herself until the father was prosecuted and fined. The disease was of a very mild type as is evidenced by only one death taking place."

CREWE MUNICIPAL BOROUGH.—"From July to December Dr. Milne's Eucalyptus Oil treatment of scarlet fever was adopted but the results did not justify its routine application or continuance.

"The existence of mild cases of scarlet fever which were not recognised by the parents in the early stage of the disease, contributed materially to the increased incidence in 1911.

"Such cases were discovered at school in the peeling stage by their teachers and during medical inspection by your Medical Officer. I have no doubt that other mild cases were not seen at all and in this way infection spread.

"When any marked increase in the existence of scarlet fever cases is found at a school, a special enquiry is made and "missed" or "carrier" cases particularly sought for."

DUKINFIELD MUNICIPAL BOROUGH.—"I was much struck on reading an article in the British Medical Journal, some time in 1909, on the Home Treatment of Scarlet Fever. As the prophesies and anticipation as regards hospital treatment in these cases had not only not been realised but had in no sense diminished the number of cases notified in any degree I determined with the consent of my Authority to carry out in our district the treatment of scarlet fever cases at home on the lines suggested by Dr. Robert Milne, Medical Officer of Dr. Barnardo's Hospitals and Homes.

"Dr. Milne claims for his treatment, which he has successfully carried out for years (more especially in connection with Dr. Barnardo's Homes), prompt and early complete disinfection of the individual attacked by the disease. In his opinion his treatment makes it impossible for infection to spread from person to person by contact. The treatment consists of the rubbing well into the skin and hair of the infected person oil of eucalyptus, and the treatment of the throat by means of an efficient antiseptic application.

"The oil of eucalyptus is used in preference to carbolic oil because the latter is apt to set up carbolic poisoning. I recommend as a throat application 10 per cent. carbolic oil,

but the nature of the antiseptic used for the throat is left in the hands of the medical attendant.

“Our method of procedure was as follows:—(1) we requested the medical men of the town to meet the Sanitary Committee and discuss the treatment. This was well gone into and they all agreed to assist the Authority in carrying it out as effectually as possible. Every pressure was laid on the importance of having a capable nurse to follow up each case and see that the treatment was carefully and effectually carried out. This suggestion, unfortunately, the Committee could not see their way at the time to adopt. Personally, I feel convinced that had this been done our results would have been even more satisfactory than they have proved to be.

“(2) Instructions were given to the parents of infected children as to treatment. In most cases these instructions were so far as we know fairly satisfactorily carried out. At first we desired the children from the infected home to attend school; other parents, however, objected, and afterwards we decided that they should not be allowed to go to school.

“INSTRUCTIONS.—The eucalyptus oil, which is provided free by the Corporation, to be used twice daily for the first four days, and afterwards once a day until the tenth day. The effect of this is to destroy the germs of infection on the skin right from the start of the disease, and *not* to wait until these germs have become disseminated, not only in the sick room and house but also in the air outside the home. If this is done effectually there is no risk of the other members of the family living and sleeping even with the infected person, and the danger of spreading the disease, is, of course, minimised. The throat treatment should be carried out also right from the commencement of the illness, very frequently for 24 hours; afterwards, at the discretion of the medical attendant.

“We commenced our treatment in July, 1909. Up to the end of June 82 cases of scarlet fever had been notified, and as the maximum as a rule takes places in the autumn and the minimum in March I expected a much larger number of cases in the second half of the year. On the other hand only 64 cases were notified in the second half of the year. What has been our experience of these cases?

“Since 1898 we have the following notifications of scarlet fever:—

1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
91	85	60	120	30	111	47	95	169	112	146	52	26

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"This is an average for the past 13 years of 92 cases. Let me take first of all the year, or rather the second half of the year 1909 when 64 cases were notified. In four houses duplicate cases occurred and were notified at the same time, all being infected at once. In four other houses cases were traced to infection from previous cases in the same home. In three of these four houses, through carelessness and laziness, the instructions were not properly carried out, and in the fourth house the drains were in an unsatisfactory condition, and had to be reconstructed and properly connected to the sewer. At the end of the first half-year's working the general opinion among the medical men of the district was that they could not rely on the treatment—particularly the throat application—being carried out effectually. To do so a capable nurse should be employed, but considering the large number of cases (82) prior to the treatment we were better off than in the earlier part of the year. It was satisfactory to know that in so few houses even considering the want of real supervision as regards the treatment, second cases occurred. I then advised a continuation of this method of treating scarlet fever for a further period of 12 months, if possible, under supervision.

"During the year 1910 the Inspector made a special point of supervising the treatment of these cases, and I have pleasure in submitting a detailed statement of the 52 cases which were notified during the year.

"In six houses duplicate cases occurred, including 14 cases in all.

"In two houses in one case 2, in the other 3, took the infection at the same time and were notified together.

"In a third house two cases occurred within five days of each other. Here the treatment was not well carried out *at first* as there were other three children in this house who, after treatment was thoroughly attended to, did not take on the disease.

"In a fourth house the treatment was not carried out at all at first until three children had become infected.

"In another house the interval between the first and second case notified was nearly seven weeks.

"In the last house there is considerable doubt as to the second case being scarlet fever, as the house was disinfected nine days after it was notified.

"In these houses where the 52 cases occurred 135 other children were in close contact with the infected person.

"During the year 1911 26 cases only were notified—the lowest number recorded for one year.

"In two houses duplicate cases occurred, including nine cases in all.

"In one house two cases of fever were notified on the same day.

"In the other house, a child whilst at the Ashton Infirmary for operation developed fever. The mother brought the child home and she and five other of her children took the infection. So far as I know the usual precautions were taken, but it is quite possible that the mother was the source of infection as it was not noticed that she had scarlet fever till she began to desquamate, and, of course, had not the usual routine treatment as above.

"I have made an analysis of the cases during 1908 before this treatment was adopted, and I find that out of 112 cases notified 38 were duplicate cases. I have not been able to go into previous years, but I have no doubt that a like proportion of duplicate cases occurred.

"On grounds not only of efficiency but of economy I strongly advocate the continuance of this method of treating scarlet fever at home. Not only is the expense of maintaining a hospital for these cases saved, but if the treatment is really carried out from the onset of the disease strong disinfection and destruction of clothing, books and other materials are unnecessary. In very few cases was disinfection of the house afterwards carried out, and that was at the wish of the people themselves rendered in the houses. In most cases no disinfectants at all were used."

Dr. Park claims certain advantages for this treatment which are by no means universally conceded by the medical profession and indeed are strongly criticised by those who have most experience of this disease. (See for instance the remarks

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of the Crewe Medical Officer of Health under the heading of scarlet fever).

WALLASEY MUNICIPAL BOROUGH.—“Of the 286 cases notified 189 went to hospital, of whom 1 died, giving a percentage of 0.3 deaths to notifications.

“These mortality rates are lower than any previously recorded.

“There was no special incidence of the disease in any particular school nor anything to suggest infection through milk.

“24 of the scarlet fever cases notified at houses where two or more cases occurred, were removed to hospital at the following intervals:—

3	cases at an interval of	1 day	after admission of	previous case.	
4	do.	2 days		do.	} Previous patients still in hospital when subsequent cases occurred.
4	do.	3 days		do.	
—	do.	4 days		do.	
1	do.	5 days		do.	
2	do.	6 days		do.	
2	do.	7 days		do.	
3	do.	7/14 days		do.	
4	do.	14/21 days		do.	
—	do.	21/28 days		do.	
1	do.	28/35 days		do.	
—					
24					

In 14 houses 2 cases occurred and were removed to hospital at the same time.

„ 1 house 3 „ „ „ „ „ „

“With regard to the cases nursed at home:—

From 7 houses 2 cases were notified at the same time.

„ 1 house 3 „ „ „ „

In 1 instance a second case was notified 1 day after the first case.

„ 1	„	„	„	2 days	„	„
„ 1	„	„	„	12 days	„	„
„ 1	„	„	„	15 days	„	„

“The foregoing Tables show the necessity of repeating what I have pointed out on several occasions, namely, that a little care on the part of parents in isolating children at the onset of the illness would have prevented many cases. It is quite a usual thing amongst the poorer people, when a child is taken ill, for it to be removed to the kitchen—the living room—and if the disease happens to be scarlet fever, that of course means that every one in the house is exposed to infection. I have met several cases, indeed, in which *after* the disease has been diagnosed as scarlet fever, the parents have

brought the child into the kitchen preparatory to its removal to hospital, and the other children in the house have been playing with it.'

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—“Scarlet fever of a mild type has been prevalent during the last seven months of the year. The original introduction of the fever seems to have been associated with visitors to the district during the Whitsuntide holidays. The difficulty of detecting the cases was extremely great and the continued prevalence was due in a large measure to its mildness. Children infected were only ill for a few hours and in some cases the parents failed to notice any illness at all with the result that the infection became widespread. It was difficult in some instances to convince guardians of children that scarlet fever had broken out in their families. Hence medical advice was not sought until after the earlier stages had passed. Domiciliary visits were paid by the Medical Officer to houses where suspicious cases of sickness were reported. The schools were examined for carrier cases and were thoroughly disinfected. Furthermore, the outbreak did not present the specific characters which are usually attributed to epidemics due to an infected milk supply. The conclusion arrived at was that association of the children with one another and the failure to detect mild cases was the cause of the spread of the disease. Twenty-nine cases were notified in June and fourteen in July. In July, visits were paid to houses receiving children from the Invalid Children's Association of Liverpool, as the result of a suggestion that children from the Liverpool slums might be introducing scarlet fever. These children were all found well and their guardians were fully alive to the necessity for ascertaining that they had not been in contact with infection prior to their country holiday. In August the disease was apparently quiescent as only 3 cases were notified, but in September there were 14 patients, and in October 34. During the latter month some of the schools were closed for a week, largely as the result of popular demand, and were again disinfected. When they re-opened an inspection of each individual child was undertaken, but no child was found suffering from, or with evidence of having had the disease. At this time several children were found with scarlet fever in the cottages and pressure was put upon the parents to consult their medical advisers, with the result of the notification of several cases. There can be no question but that some of the children about this period derived their infection from patients returning from the Isolation Hospitals, which, although full, had been able to cope with the outbreak. In November 26 cases and

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in December 20 were notified. The district is one which lays itself out to cater for persons convalescent from illness, and undoubtedly, residence for a week or two at this resort is common after scarlet fever. Proximity to the large towns of Liverpool, Birkenhead and Wallasey and the constant intercourse between the inhabitants of these places likewise tend to be factors in the spread of epidemic disease. It is five years since there was any large outbreak in your district, and this means a large proportion of susceptible persons unprotected by a previous attack of scarlet fever. Disinfection of houses, and removal of infected persons to the Isolation Hospital, were carried out as speedily as possible. The Medical Officer of Health was consulted in a number of doubtful cases by medical practitioners.

"155 persons were notified as suffering from scarlet fever in 1911; the annual average of notifications during the previous ten years was 80.

"87 of the cases occurred in West Kirby and 68 in Hoylake.

"Three deaths resulted from scarlet fever."

NANTWICH RURAL DISTRICT.—"The year under review was marked by a considerable prevalence of scarlet fever in the district. Thirty-five of the townships were affected and in addition to these the disease appeared on two occasions in the Union Workhouse. The cases in Audlem township were twenty-six in number, but to these are to be added the cases at Dodecott, Coole Pilate and Buerton, which really formed one outbreak. There is no doubt that the disease was spread from the Audlem School by means of unrecognised cases. I obtained the closure and disinfection of the school and isolated all the cases where home-isolation was difficult in the Isolation Hospital. The cases at Acton, Stoke and Burland seemed to derive their infection from the Acton School. The cases at Church Coppenhall appeared to have been infected from the Borough of Crewe. The outbreak at Faddiley was spread from the Faddiley Council School. The parents of two of the children were prosecuted for non-notification of the disease and were fined. Another prosecution of a parent was undertaken for non-notification of the disease at Church Minshall. In this case a fine was imposed also. The cases at Willaston appeared to be infected by some unrecognisable case at the Council School. The other cases in the district do not appear to merit any special comment."

Typhoid Fever.

There is nothing of great importance to record under this heading. There were 251 cases notified in the Administrative County during 1911 and 36 deaths were reported as due to this disease. Only one localised outbreak occurred—at Broadheath—and Dr. Golland relates the circumstances attending this.

I append a few extracts from the Reports of the District Medical Officer of Health on this subject.

STALYBRIDGE MUNICIPAL BOROUGH.—“We have not a hospital for these cases so that usually they have to be treated at home often under the most disadvantageous conditions. When, however, the Borough Hospital, Ashton-under Lyne, is available for the reception of these cases our Sanitary Authority are kindly permitted to make use of the Hospital for such cases from our Borough as we may desire to send there. Towards the end of October the Hospital became available for cases of typhoid fever and when a severe form of the disease broke out in a very large and poor family where isolation was quite impossible, with the result that no less than six members of the family were attacked, the sufferers, as well as another case which could not possibly receive suitable treatment at home, were all removed to the Hospital.”

ALTRINCHAM URBAN DISTRICT.—An outbreak of enteric fever occurred at Broadheath in August and September, 1911.

“The District involved was roughly along the main road to Manchester, from the Canal on the South to the Cheshire Lines Railway on the North, and specially affected the area on the West side of the road, known as Dale Square and the streets adjoining.

“In all it affected 22 persons, of whom 19 lived in this particular district.

“Up to August 4th the town had been quite free from any case of typhoid fever, except one in April at the other end of the town, which was clearly traced to Salford, and had nothing to do with the present attack.

“On August 4th I received four notifications of typhoid fever cases from three houses in Broadheath, all upon the high road from Atlantic Street to Sinderland Lane.

“All these cases were removed to the Hospital the same day, their houses visited, and the fullest enquiries, &c. made. The

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houses, drains, ashpits, bedding, &c, were all disinfected at once. Investigations were at once made as to all food supplies, milk, water, &c.

"On August 12th another case was reported in Dale Square and removed to the Hospital on this day. Disinfection as in the other cases. Another child who had been sleeping with this case was seen and eventually removed to the Hospital on the 19th, with another disinfection of premises.

"August 12th, two other cases were reported and removed to Hospital from the same neighbourhood.

"August 15th, a case was reported and removed from Navigation Road.

"No further cases occurred until September 6th when another case was reported from Dale Square, from the house next to that from which the two children had been removed. It was removed and the usual disinfection carried out.

"September 7th, two cases reported and removed, one being a daughter of one of the first cases.

"September 9th, another case from Dale Square removed.

"September 12th, a case from Grosvenor Road removed.

"Sept. 13th, a case from Churchill Road removed.

"Further cases occurred in this district on the 14th, 20th, 22nd, 29th and October 4th and were all removed as reported.

"Cause of Outbreak.—The very local character of the outbreak made it very unlikely that it had anything to do with either the milk or water supply, but every investigation was made into this and other foods. I am greatly indebted to my friend, Dr. Garstang, Medical Officer of Health for the Rural District, for personally tracing out the whole of the farm supply of milk. No illness or suspicious circumstances were found by him and the supply was so various to the patients affected that it may safely be excluded, in fact in two cases nothing but tinned milk had been used.

"The water supply was in every case that of the North Cheshire Water Co., which received its water from the Manchester Waterworks. This had clearly nothing to do with the disease.

“Other foods were all investigated and found of very various-supply and clearly did not account for the epidemic.

“On August 13th, as the result of an unsigned letter I received, I visited No. 29, Dale Square, and found an unreported case of typhoid in the third week of the disease; case removed at once and house disinfected; there had been no medical attendance upon this case. Further enquiries revealed that this was the fourth case of illness (almost certainly Typhoid) in this house, extending back to a date anterior to the first cases of the present epidemic, and that the mother, a charwoman, had been working at the first house from which I received a notification. Upon the various facts I discovered with regard to these cases, and their connection with others of the persons affected, I have no doubt that this was the source of infection. It was possible to trace all the subsequent cases to infection from patient to patient.

Sanitary Conditions.—The sanitary conditions varied considerably. Of the 18 houses affected, 6 had waterclosets and ashbins; 12 had double privy ashpits, 3 were in bad condition, 2 were the old brick ashpits, and 7 were the best of their kind, shallow and cemented. The drains with one exception were all in perfect order, trapped with modern gullies and quite free. The condition of the houses themselves as to cleanliness and good housekeeping was: very good, 7; fair to good, 6; dirty, 5. There was no overcrowding.

“The measures taken to deal with the outbreak on the first notification were: Sewers and drains flooded with disinfectant, all ashpits in the area emptied and scraped and disinfected, yard drains disinfected, yards of all cottages sluiced and cleaned by the Council's men, many hundreds of bottles of disinfectants distributed free, notices posted with directions, houses disinfected, clothing, bedding, &c. removed to the Isolation Hospital disinfecting plant and thoroughly treated, constant visits of inspection, &c.

“There were no further cases after October 4th when the last patient was removed to Hospital.

“Since then a scheme for dealing with the whole of the Dale Square area is in progress and promises a great improvement in the condition of life there.

“As some considerable open space exists in this locality it is proposed to make a children's playground, &c. In view of some

TYPHOID FEVER—ACUTE EPIDEMIC POLIOMYELITIS.

criticism which has been indulged in, it is only fair to point out that the Sanitary Committee had this scheme sanctioned and plans prepared before the epidemic began. With the ready co-operation of the owner they are engaged in carrying it out."

NANTWICH RURAL DISTRICT.—"On August 20th the case of a girl, aged 18, was reported from Haslington. She had been sent home ill from her situation at Alderley Edge, and had undoubtedly brought the disease home with her. Her friends declined to send her to the Isolation Hospital. On November 5th a young woman, aged 24, was reported from Haslington. I could not trace the source of infection with certainty. It appeared however that she had within the period of incubation visited some friends next door to the case above-mentioned and it is possible that she may have received the infection in that way. She was removed to hospital and made a good recovery. On November 7th the case of a man, aged 38, was reported from Willaston. He was a railway engine driver and was almost certainly infected outside the District. Owing to want of accommodation at the Isolation Hospital for the nurses required to attend to this case, he had to be treated at home. I provided him with disinfectants and a covered pail for the reception of excreta, and employed a man to remove its contents daily. Unfortunately this man's case led directly to the infection of three members of his family, aged 8 years, 12 years, and 4 years. These cases were notified on December 3rd, December 8th, and December 8th, respectively. One of these latter cases, I regret, terminated fatally. The Joint Hospital Board have now furnished additional rooms in the Home at the Isolation Hospital, and such an unfortunate inability to take in a case is not likely to recur."

Acute Epidemic Poliomyelitis.

This disease comes as another, and until quite recently unexpected addition to the responsibilities of Medical Officers of Health. In London it has been compulsorily notifiable for a few years, and in the provinces compulsory notification is becoming increasingly adopted. Several epidemics have been placed on record in Cumberland, Dorsetshire, Cornwall and Devonshire. Isolated cases have been reported in a few parts of Cheshire. The disease is literally a horrible one, for in about 75 per cent. of the recorded cases permanent paralysis of varying degrees is recorded. The question of notification offers many problems, for the disease is one of immense potentialities for mischief, affecting any and every part of the nervous system, and is, moreover, of such varying types that almost any serious nervous affection

ACUTE EPIDEMIC POLIOMYELITIS.

might be brought within its scope. It may be that it is, like paratyphoid fever and para-syphilis, merely a 'sport' of epidemic cerebro-spinal meningitis or what has been called "spotted fever." But there are said to be several distinguishing features between these two diseases, and these are so well tabulated in an Appendix, by Dr. Hugh MacEwen, to a special report issued by the Local Government Board, that I venture to reproduce them here, together with a few notes on poliomyelitis taken from the same report.

"Acute poliomyelitis is not a new disease. Its clinical features and pathological characteristics were fully described by Heine in 1840, and it has long been recognised as a disease of children by the medical profession in this country, usually by the name of "infantile paralysis" or "anterior poliomyelitis."

"In recent years certain districts in Europe, America and Australia have been invaded by an epidemic disease, the clinical and pathological characters of which strongly resemble those of infantile paralysis. This malady, appearing to be infectious in character, has been very carefully studied by many observers and is now known as acute anterior poliomyelitis, epidemic poliomyelitis or, on the continent, as Heine-Medin's disease.*

"The term "acute anterior poliomyelitis," implying an acute inflammation localised in the anterior cornua of the grey matter of the spinal cord, though indicating the chief lesion, does not cover the whole of the conditions met with. In most cases it is not solely the anterior cornua that are affected—though they are the part of the nervous system that generally suffers most. The white matter of the cord may likewise be involved. Nor are the lesions confined to the spinal column, for the brain and pia mater may also participate in the morbid changes.

"Poliomyelitis, to use the shorter and more convenient term, may be defined as a disease resulting from an acute, self-limiting, general infection, occurring sporadically and

* Wickman states that Netter and Levaditi have been able to demonstrate that the serum of a person who had three years before suffered from sporadic poliomyelitis was able to neutralize in vitro the virus of epidemic poliomyelitis. He believes that this, among other observations, conclusively proves that they are one and the same disease.

ACUTE EPIDEMIC POLIOMYELITIS.

in epidemic form—its most marked symptoms being sudden paralysis emanating from lesions in the spinal cord and brain.

“The disease presents such a variety of symptoms that it is impossible to present a single clinical picture. Different epidemics have been characterised by certain groups of prodromal or preliminary symptoms. There is generally an initial rise of temperature accompanied by symptoms which may not at first suggest any suspicion of the true nature of the disease,—drowsiness, irritability, malaise, vomiting and gastro-intestinal disturbances being very common.

“The onset is frequently attributed by the patient’s friends to a fall, a chill, or in the case of infants teething. Swimming or wading in cold water has been associated with the onset of attack in certain epidemics.

“Shortly after the occurrence of primary symptoms, paralysis generally appears—such paralysis being seldom observed without such preliminary manifestations, though occasionally a child may go to bed apparently well and be found in the morning to be suffering from paralysis.

“The following account of the clinical aspect of the disease has been taken largely from the works of Wickman, who is probably the greatest authority on the subject.

General Symptoms.

“*Onset.*—The onset of the disease is generally sudden, attacking persons in apparently good health. In a few cases the onset may be insidious in character.

“*Fever.*—A sharp rise of temperature is, perhaps, the most constant symptom met with, though some cases may run their course without fever. The range of temperature varies considerably. According to Wickman, it ranges from 99 degrees to 102.2 degrees F. In the New York epidemic of 1907, the temperature was somewhat higher, varying from 101 degrees to 104 degrees F. in most cases. The duration of the fever is generally short. It seldom lasts longer than 2 to 7 days. The few temperature charts that have been published in connection with poliomyelitis show that the fever generally runs an irregular course.

ACUTE EPIDEMIC POLIOMYELITIS.

“The degree of fever seems to be no criterion of the severity of the attack. The temperature in the so-called abortive cases may be quite as high as in cases in which extensive paralysis or death results.

“*Prostration.*—This is a frequent early symptom of the disease. Muscular weakness and extreme weariness are characteristic features of many cases.

“*Headache.*—In a large proportion of cases headache accompanies the fever, though in young children it may be difficult to determine whether it is present or not. Wickman states that it is generally occipital in character, while in the New York epidemic general or frontal headaches seemed to predominate.

“Wickman’s observations led him to the conclusion that the headache in poliomyelitis is seldom so severe as that met with in cerebro-spinal meningitis, where the patient frequently shouts out owing to its intensity.

“*Gastro-intestinal disturbances.*—These have been very prevalent in certain epidemics, so much so, indeed, that some observers have, on this account, come to the conclusion that the virus gains entrance to the body by way of the mouth. Krause found digestive disturbances present at the onset of 90 per cent. of all cases in an epidemic which occurred in Germany in the neighbourhood of Hagen.

“Vomiting is met with not infrequently. It is not, however, usually very severe in character nor of long duration. This serves to differentiate the disease from cerebro-spinal meningitis, in which the vomiting is generally more severe and prolonged.

“Diarrhœa and constipation are common. Constipation was present as often as diarrhœa in those cases in which the condition of the bowels was recorded in the New York epidemic.

“*Catarrhal conditions.*—It is stated by Wickman that catarrhal conditions of the respiratory system are not of very frequent occurrence, though symptoms of catarrh and bronchitis may usher in an attack of the disease. Sore throat and tonsilitis have been noted in connection with certain epidemics.

ACUTE EPIDEMIC POLIOMYELITIS.

"Sweating.—Müller states that excessive sweating was a characteristic early symptom of the cases studied by him.

"Skin eruptions.—Skin eruptions occurred in 61 out of 742 cases in the New York epidemic. The eruption was most commonly papular and covered the entire body. A skin eruption is, however, by no means characteristic of poliomyelitis. Herpes is, according to Wickman, very seldom met with, though other observers have frequently noted its presence.

"Retention of urine.—Retention of urine has been occasionally reported.

Nervous Symptoms.

"Drowsiness.—Drowsiness is of frequent occurrence especially in children. The patient falls asleep and may remain sleeping for several days, only waking when he is aroused for the purpose of taking nourishment. This somnolence may occasionally merge into coma, but, if so, the comatose stage is generally of short duration. Delirium is of rare occurrence.

"Irritability.—Irritability or restlessness is also very common. The Collective Investigation Committee on the New York epidemic state that the most marked features of that epidemic were the irritative, nervous symptoms at the time of onset and during the first few days, giving rise frequently to great difficulty in diagnosis.

"Pain and tenderness.—The same Committee remark—*"Almost all of the cases had pain and tenderness during the first few days. In practically half the cases it was quite marked. In many cases it was excruciating. It occurred most often in the lower extremities, next in frequency in the spine and trunk, and still less frequently in the upper extremities and neck. In regard to the pain and tenderness, a peculiar feature of this epidemic seemed to be the occurrence of pain at the back of the knees or below the knees and in the calf."*

"This pain and tenderness may be a very marked symptom of the early stages of the disease and may be so intense that the patient can scarcely tolerate the weight of the bed clothes nor remain in the same position in bed for any length of time.

ACUTE EPIDEMIC POLIOMYELITIS.

“Pain is frequently present in the back of the neck and along the spine, and may be very severe in character. It does not generally last very long, frequently subsiding with or before the onset of paralysis. Numbness is sometimes found, especially in older children and adults. Wickman observed a case in which there was diminution of the sense of pain from the hips downwards together with paralysis of the lower limbs. This patient had also difficulty in distinguishing between heat and cold when they were applied to his feet.

“*Meningeal symptoms.*—A large number of cases of poliomyelitis seem to have an onset closely resembling that of cerebro-spinal meningitis.

“Pain, stiffness, and even rigidity of the neck are sometimes met with, rendering it painful or impossible to bend the head forward. Sometimes, in severe cases, the head may even be retracted from contraction of the posterior muscles of the neck. While very marked retraction of the head, such as is met with in cerebro-spinal meningitis, is uncommon, many cases of poliomyelitis occur in which the head is maintained farther back than normal. The presence of a modified Kernig’s sign (inability to completely extend the leg when the thigh is flexed) renders the diagnosis still more difficult.

“It is possible, as has been pointed out by Wickman and others, that in some of these cases we are dealing with a true meningitis of independent origin in addition to poliomyelitis. On the other hand, post-mortem examinations have shown that the pia mater is congested and infiltrated in the acute stages of poliomyelitis. Under such circumstances some of the above symptoms are to be expected in true cases of the disease.

“*Muscular twitchings.*—Muscular twitchings, jerking, or tremor of the limbs are sometimes observed in this disease. They generally occur before paralysis sets in, but may also be seen in cases that do not result in paralysis. Such manifestations are due to disturbances of the motor centres.

“*Reflexes.*—Wickman believes that the condition of the patellar reflex is of importance in the diagnosis of poliomyelitis and makes the following statement with regard to it:—

ACUTE EPIDEMIC POLIOMYELITIS.

1. The patellar reflex disappears. This is the rule. It should be noted that loss of the patellar reflex may be the only recognisable symptom of the disease (Wickman, Ed. Müller, Zappert).
2. There may be a preliminary increase followed by loss of the patellar reflex (Wickman, Ed. Müller).
3. When the crus or bulb is involved, an increase of the patellar reflex in the otherwise normal legs may be observed (Wickman, Neurath, Zappert, Foerster, Ed. Müller).
4. In connection with paralysis and loss of reflex in one leg there may be an exaggeration of the reflex in the other apparently normal leg (Wickman, Zappert).
5. Increase of the patellar reflex in a paretic and clearly atrophied leg.

“The Committee that investigated the New York epidemic state that “a study of the reflexes established the general doctrine that in poliomyelitis the deep reflexes in the parts paralysed are absent and that they are often absent in non-paralysed parts.”

“In summary of what has already been said the United States Public Health Bulletin, No. 44, February, 1911, may be quoted.

“The characteristic features of acute anterior poliomyelitis in the early stage are sudden onset with fever, gastro-enteric disturbances (vomiting, diarrhœa, constipation), occasionally sore throat, headache, restlessness followed by apathy, pains in the neck, back, and muscles; muscular twitchings, exaggeration or abolition of tendon reflexes. Symptoms of a rather mild meningitis are present in a varying proportion of cases, and when present are rather characteristic.”

“The clinical picture prior to the onset of paralysis may be that of an indefinite general infection or toxemia, gastro-enteritis, tonsillitis, multiple neuritis, meningitis or encephalitis.”

Types of the Disease.

“There are, according to Wickman, eight principal types of the disease, and, as most other observers have confirmed and adopted his classification, it may be given here.

“1. *The spinal poliomyelitis type*.—This is by far the most common and easily recognised form of the disease. After the commencement of such preliminary symptoms as have already been enumerated, paralysis sets in. It is sudden in onset and of a flaccid motor type which reaches its maximum, both in extent and degree, within one or two days, and then goes no further. After that a retrogression generally takes place so that the paralysis (should it persist) finally involves a considerably less area and is much less marked than in the acute stage. Sometimes complete recovery of the affected muscles takes place.

“The extremities are the parts most frequently paralysed. Statistics show that the lower limbs are affected twice as frequently as the upper. Combinations may, however, occur as—both legs, one leg and one arm of the same or opposite sides, both arms and one leg, &c.

“The permanent paralysis may affect the limbs as a whole; as a rule, however, it is confined to certain groups of muscles, and these ultimately become atrophied as a result.*

“Besides paralysis of the limbs, paresis of the muscles of the back, neck and abdomen is occasionally met with.

“2. *The ascending or descending type*.—This strongly resembles Landry’s paralysis. The paralysis generally begins in the lower extremities and gradually ascends until most of the musculature of the body becomes involved. Such cases often succumb from paralysis of the respiratory muscles. Very occasionally the paralysis is descending instead of ascending.

“3. *Bulbar or pontine form*.—This form is characterised by paralysis of the parts supplied by the cranial nerves which have their nuclei in the medulla or pons. Thus the face and eyes generally become affected and there is frequently difficulty in swallowing.

* It is stated by Flexner that the proportion of cripples as a result of this disease in 23,000 cases was from half to three-quarters of the whole.

ACUTE EPIDEMIC POLIOMYELITIS.

“4. *Encephalitic form*.—Here we have to deal with initial changes in the cortex of the brain followed by spastic monoplegia or hemiplegia.

“5. *The ataxic form* resembles an acute ataxia, the ataxic symptoms being due to lesions of the cerebellum.

“6. *Polyneuritic type* presents a clinical picture of multiple neuritis and is characterised by hyper-sensibility of the nerves, which gives rise to pain when pressure is exercised.

“7. *Meningeal form*.—In this form two types of cases are met with. (1) Those with initial symptoms of meningitis followed by spinal or bulbar paralysis. (2) Cases in which the symptoms of meningitis are followed by paralysis.

“8. *Abortive forms*, characterised by fever, headache, and stiffness of the neck, but without paralysis. Such cases can only be diagnosed—even with probability—during the prevalence of epidemics.

Diagnosis.

“The diagnosis of poliomyelitis, especially in the early stages of the disease before paralysis has set in, may be a matter of considerable difficulty. A typical case, with sudden onset of flaccid paralysis of the limbs following on acute febrile disturbance, is generally sufficiently characteristic, but, as we have seen, the initial symptoms are so varied and the types of paralysis so numerous as often to obscure the true nature of the disease.

“Wickman lays stress on the following symptoms as being characteristic:—1. Drowsiness; 2. Pain and tenderness; 3. Stiffness of the neck; 4. Profuse perspiration. According to Müller the three cardinal prodromal symptoms are:—1. Profuse perspiration; 2. Hyperæsthesia; 3. Leucopenia.

“Among the conditions with which poliomyelitis is most likely to be confused may be mentioned epidemic cerebro-spinal meningitis, influenza, and tuberculous and acute or septic meningitis. The following rough differentiation taken largely from a table drawn up by Wickman, may, perhaps, help to distinguish poliomyelitis from cerebro-spinal meningitis:—

ACUTE EPIDEMIC POLIOMYELITIS.

Epidemic Poliomyelitis.

1. The disease is of the nature of an acute poliomyelitis, resulting in paralysis emanating from lesions of the spine.

2. Paralysis generally affects the limbs, and is, in many cases, permanent.

3. Fever lasts 3-7 days and then temperature becomes normal.

4. Headache frequently present, but not excessively severe.

5. Drowsiness is frequently present, but the sensorium generally remains clear.

6. Herpes may occur.

7. Rashes very uncommon.

8. Deafness an uncommon sequela.

9. The meninges are seldom inflamed.

10. Cerebro-spinal fluid obtained by lumbar puncture clear.

Albumen slightly increased.

Lymphocytes found.

Bacteria nil.

11. Lymphocytic infiltration of pia mater.

12. Blood count—leucopenia with relative increase of lymphocytes.

13. Epidemics occur in summer and autumn.

Epidemic Cerebro-spinal Meningitis.

Most cases present very marked symptoms of meningitis.

Paralysis is rare with the exception of a transitory paralysis of eye muscles.

In most cases, that do not die during the first few days, fever is prolonged and becomes of an intermittent or remittent type.

Headache very severe, so that patient shouts out or screams.

Coma is frequent.

Is commonly met with.

Found in some cases ("spotted fever.")

Deafness occurs in a fair percentage of cases.

In most cases a turbid or purulent fluid is found in cerebro-spinal canal.

Turbid.

Albumen increased to a much greater degree.

Polymorphonuclear leucocytes generally present.

Meningococcus present.

Polymorphonuclear infiltration.

Number of leucocytes is high and there is a relative increase of polymorphonuclear leucocytes.

They generally occur in winter and spring."

Isolation of the sufferer should apparently be maintained for about four weeks after the subsidence of the acute symptoms and quarantine of "contacts" should be ensured for at least 14 days after last exposure to infection.

We seem to enter here on a new phase of bacterial infection for the causative agent of this disease, whatever its precise nature may be, passes through the recognised strainer of bacteria (the Pasteur-Chamberland filter) and resists methods which have hitherto been regarded as capable of retarding the growth of infective material. This causative agent has not so far been rendered visible under the highest powers of the microscope and cannot be cultivated on the usual bacterial media.

Medical aid seems, so far at least, practically powerless in combatting this insidious malady: all that one can do is to lull

ACUTE EPIDEMIC POLIOMYELITIS—MEASLES.

pain during the acute stage and, when this has passed off, to restore some little vitality to the helpless and deformed limbs and revivify as far as possible the damaged special senses. The problem appears likely to be further complicated by the possibility of occurrence of those deadly dangers—"carrier" cases.

In December the advisability of placing acute poliomyelitis and cerebro-spinal fever on the schedule of diseases notifiable under the Infectious Diseases (Notification) Act, 1889, was considered by the Crewe Health Committee and it was decided that the Council be recommended to make the necessary order to do so.

The same action was taken by the Wirral Rural District Council early in 1912.

So far I have not heard of any other Local Authority taking this step.

Measles.

This disease was seriously prevalent in a number of sanitary areas during 1911. No fewer than 153 deaths were due to the disease or its complications and probably several thousand cases occurred. No fewer than 72 schools had to be closed on account of the prevalence of this disease.

A rather interesting outbreak occurred in Wallasey Municipal Borough towards the end of the year in one of the schools. "On October 19th 4 cases of measles were reported by the teacher of St. Paul's Schools. These cases were visited, and the usual precautionary measures in the way of exclusion of contacts adopted. On October 30th 42 additional cases were reported in one batch, followed in the next three days by 11 others. The schools were visited, and every child presenting any signs of illness excluded. The teachers were instructed to at once exclude any sick children and to notify the Medical Officer of Health of any child so excluded. This was done; the children notified were duly visited and strict isolation enjoined at home, plus strict exclusion of suspicious children and contacts from school, with the gratifying result that the outbreak ceased."

It is to be feared that the instructions relating to the control of this disease contained in the Memorandum of the Board of Education and the Local Government Board are not

followed out by District Medical Officers of Health. It is there laid down that the best procedure to follow is to arrange for prompt information as to the first cases coming to the knowledge of the school teacher: this is done in the Administrative County. When such cases are reported to the Medical Officer of Health he is to ascertain the dates of onset of the illness and then to arrange for the closure of the school or affected department on the 9th day after the first date of onset, the closure to be for 5 days. This allows children who have been infected by these early cases to develop their attacks at home and not in school, there being less likelihood of the spread of infection under these conditions.

When the school re-opens there will be a diminished attendance owing to the weeding-out of this first batch of infected scholars and contacts, but it will not frequently be such a serious diminution as to call for complete closure of the school. If, however, a second batch of infected children appears 12 or 14 days after re-opening it will probably be best to close the school for a few weeks and allow the epidemic to burn itself out.

The first closure on the 9th day is the essential feature of this method of preventive treatment and it is this which is so frequently neglected. It cannot be too strongly impressed on District Medical Officers of Health that no matter if there have only been 1 or 2 infected children occasioning a possibility of infection in school the best policy is to close that school or department on the 9th day after the onset of illness in the infected child or children and to continue this closure for 5 days or one school week.

Mumps.

There is only one specific mention of this disease, viz.: in the Borough of Congleton, the Medical Officer of Health of which reports as under:—

“Of non-notifiable diseases, mumps, which were epidemic in the parishes of St. Stephen’s and Mossley at the end of 1910, spread to St. Peter’s at the beginning of the year and had invaded the whole district before the end of March. The disease was not confined to children, although they were the chief sufferers, and the number of persons affected was enormous.”

MUMPS—EPIDEMIC PURULENT CONJUNCTIVITIS.

The disease, however, was fairly prevalent in some parts of the County and 13 schools had to be closed by reason of serious interference with attendance.

Epidemic Purulent Conjunctivitis.

Dr. Davidson, Medical Officer of Health, Borough of Congleton, reports an outbreak of an eye affection which he designates by the above name. The description given does not enable one to state whether or not the condition was *trachoma* but there is a strong suspicion that it was. I give the report in Dr. Davidson's own words.

"There was also in the first quarter of the year a considerable prevalence of an acute inflammatory eye affection, which was evidently of a highly contagious character, for although generally starting with a child, much more frequently than not all the inmates of an invaded house became infected, and sometimes as many as 6 or 8 were found to be suffering at the same time in one house. Not being a notifiable disease, the exact number of cases could not be ascertained, but if put at 150 in two months it was thought any error would be on the side of under estimation. Probably "epidemic purulent conjunctivitis" would be a suitable enough name for the affection. A case of ordinary purulent conjunctivitis in a house is not infrequently met with, but 150 such occurring in two months would be unusual and remarkable, and that number, with all the features of this outbreak, must be of very rare occurrence anywhere, and certainly no such outbreak has occurred here in the last 35 years. Some of the houses inspected were not very clean, and a few were perhaps overcrowded; but these conditions were not constant enough to warrant the conclusion that they were the cause. Most of the cases got well in a month or six weeks without apparently any permanent impairment of vision, only in some a troublesome granular condition of the lids persisted for a long time."

Section IV.—Isolation Hospitals, &c.

Isolation Hospitals.

The hospital accommodation for infectious disease, including small-pox, which exists at the present time in the Administrative County, is as follows:—

ALTRINCHAM URBAN DISTRICT.—On January 18th, 1910, a new isolation hospital was opened at Sinderland Road, Altrincham. There are separate pavilions for scarlet fever, diphtheria and typhoid fever and an isolation or observation block with all the usual administrative accessory buildings. There are 20 beds for scarlet fever, 5 for typhoid fever, 5 for diphtheria, and 2 for cases under observation.

BUCKLOW JOINT HOSPITAL BOARD.—This is formed by representatives of the Councils of Bucklow Rural District and Alderley Edge, Ashton-upon-Mersey, Hale, Knutsford, Sale and Wilmslow Urban Districts. The Board retains under agreement 45 beds in the Manchester Corporation (Baguley and Monsall) hospitals for infectious diseases other than small-pox, and 10 beds for small-pox. Arrangements have now been made for the reception of cases of pulmonary phthisis if necessary.

Dr. Garstang reports that:—158 cases were admitted during 1911 making, with 37 remaining from 1910, 195 cases receiving treatment. 179 were discharged, and 3 died, leaving 13 in at the end of the year. 91 cases came from the Bucklow District, 1 from Alderley Edge, 15 from Ashton-on-Mersey, 15 from Hale, 35 from Knutsford, 26 from Sale, and 11 from Wilmslow. At the end of 1911 there remain 4 from Bucklow, 1 from Ashton-on-Mersey, 2 from Hale, 1 from Knutsford, 3 from Sale, and 2 from Wilmslow. The total number of cases sent to Hospital since December 8th, 1902, is 1207.

CONGLETON JOINT HOSPITAL BOARD.—This is formed of representatives of the Councils of the Borough and Rural District of Congleton and the Urban Districts of Alsager, Biddulph (Staffs.), Buglawton and Sandbach. The Hospital, situated at West Heath, near Congleton, is an excellent modern building and is capably managed.

ISOLATION HOSPITALS.

There is a Small-pox Hospital at Arclid for the use of the same Board.

CREWE MUNICIPAL BOROUGH.—Crewe Isolation Hospital, to which a pavilion for diphtheria was added a few years ago, and a small farm house and corrugated iron building for small-pox cases. Revolving shelters for phthisis.

HYDE MUNICIPAL BOROUGH.—Hyde Isolation Hospital, completed in 1905, and a temporary hospital for small-pox. The entire hospital has recently been re-painted inside and out and sundry repairs executed at a cost of about £500.

HOLLINGWORTH AND MOTTRAM URBAN DISTRICTS AND TINTWISTLE RURAL DISTRICT.—A temporary hospital of 6 beds, for small-pox only, situated on Mottram Moor.

LYMM URBAN DISTRICT.—A new hospital erected in 1904.

MACCLESFIELD MUNICIPAL BOROUGH.—A hospital, which is in part permanent and in part temporary, and another for small-pox. Two cottages were purchased in 1904 for isolating small-pox "contacts" and "suspects." This small-pox hospital is now being utilised for phthisis cases.

MACCLESFIELD RURAL DISTRICT.—A temporary hospital for small-pox. Arrangements are made for the use of 14 beds in Macclesfield Borough Isolation Hospital.

NANTWICH RURAL DISTRICT AND NANTWICH URBAN DISTRICT.—A new hospital was opened on October 11th, 1906. It provides 20 beds for patients and is situated at Worleston. There is also a temporary hospital for small-pox at Ravensmoor.

NORTHWICH RURAL DISTRICT AND NORTHWICH, WINSFORD AND MIDDLEWICH URBAN DISTRICTS.—A new hospital was completed in 1905. Northwich Rural District some time since provided a temporary hospital at Marbury which is now reserved for small-pox, since other diseases are isolated at Davenham Hospital. Northwich Urban District and Winsford Urban District have each provided a temporary hospital.

RUNCORN RURAL DISTRICT.—A new isolation hospital was completed in 1905. There is also a hospital for small-pox at

Moore. Plans have recently been approved and a Local Government Board Inquiry held for an extension of this hospital by the building of a large new block for scarlet fever cases. The Rural District has now combined with the Urban District for small-pox hospital purposes and they jointly use a temporary building, near Moore, on the banks of the Manchester Ship Canal.

RUNCORN URBAN DISTRICT.—Runcorn Isolation Hospital (Weston Road) with 12 beds; only one disease can be treated here at one time.

WALLASEY URBAN DISTRICT.—Wallasey Isolation Hospital, lately enlarged, and temporary hospital for small-pox.

WIRRAL JOINT HOSPITAL BOARD.—Wirral Rural District and Higher Bebington, Lower Bebington, Bromborough, Ellesmere Port and Whitby, Neston and Parkgate, Hoylake and West Kirby Urban Districts use the Spital Hospital, to which a new pavilion was added a short time ago. A hospital at Greasby is available for small-pox.

These hospitals are fairly fully described in my Annual Report for 1910.

Crewe Isolation Hospital has maintained its good reputation for useful work. The Report of the Medical Officer of Health contains a complete statement of income and expenditure relating to this hospital for the current year, which will doubtless be of considerable assistance to Authorities about to embark upon the construction of an Isolation Hospital, as well as being useful for comparative purposes as regards cost of upkeep, &c., to existing hospitals. I reproduce it with this idea in view from the Report named.

Statement of expenditure and income for the year ending 31st December, 1911 :—

ISOLATION HOSPITALS.

EXPENDITURE.

	£	s.	d.	£	s.	d.
Salaries of Matron, Nurses, etc. ...				339	7	10
Porters' Wages (proportion) ...				90	14	8
Nurses' Uniform ...				22	1	0
Maintenance of Patients and Staff:						
Groceries ...	196	0	9			
Butchers' Meat ...	119	12	6			
Fish, Ice, etc. ...	13	6	10			
Vegetables ..	13	11	9			
Milk ...	92	10	0			
Bread ...	56	14	7			
Stimulants ...	2	9	6			
	<hr/>			494	5	11
Druggists' Sundries and Antitoxin ...				106	16	5
Drapery, Crockery, Hardware, Cleaning Materials, etc. ...				86	11	5
Repairs to Vans, Laundry Fittings, Disinfectors, Electric Light Fittings, etc.				31	9	7
Maintenance of buildings, Painting, etc.				37	2	5
Gas ...				20	9	4
Electricity ...				121	6	2
Water ...				25	16	4
Rates and Taxes ...				71	2	6
Insurance ...				6	6	1
Telephone Charges ...				11	6	0
Fuel ...				143	18	10
Cultivation of Grounds ...				55	2	2
Horse Hire for Ambulance, etc....				100	0	0
Rent of Small-pox Hospital ...				20	0	0
Interest on cost of Electric Main ...				13	11	9
Printing, Stationery, Advertising, etc. ...				17	19	8
Asphalting walks, etc. ...				33	4	2
Furniture and Repairs ...				3	0	7
Sundries ...				14	0	3
	<hr/>			£1,865	13	1

INCOME.

	£	s.	d.
Removal and Maintenance of Patients ...	122	2	3
Contribution from Cheshire County Council under Isolation Hospital Acts ...	254	9	9
	<hr/>		
	£376	12	0

The cost of maintenance per case ; the average daily number of patients, and their average residence, etc., since the opening of the Hospital are shown in the following table :—

Year.	PATIENTS.			Total Expenditure	Average cost per patient.	Daily cost per head for provisions	Provisions.
	Total admitt- ed.	Average daily number.	Average residence in days.				
				£ s. d.	£ s. d.	s. d.	£ s. d.
1898	68	9.1	48.0	1020 2 0	15 0 0	2 4	378 19 6
1899	73	9.6	48.0	1083 7 1	14 16 9	1 11½	347 4 9
1900	158	20.3	47.0	1161 11 8	7 7 0	1 1½	417 19 0
1901	129	17.0	48.0	1367 0 10	10 12 0	1 5½	452 18 0
1902	102	11.7	42.0	1173 5 9	11 10 0	1 5½	314 10 7
1903	169	22.4	48.5	1404 6 7	8 6 2	0 11½	398 19 7
1904	298	34.2	42.0	1642 14 3	5 10 3	0 10½	561 2 4
1905	160	16.7	38.5	1592 0 3	9 19 0	1 7½	488 16 2
1906	141	16.0	41.6	1408 12 9	9 19 9	1 3½	384 15 8
1907	420	38.8	32.7	1893 9 1	4 10 1	0 10½	601 8 3
1908	285	31.3	41.1	2182 12 9	7 13 1	1 1½	661 16 7
1909	254	25.6	36.8	1779 18 11	7 0 1	0 11½	450 13 10
1910	401	36.6	35.1	1907 2 9	4 15 1	0 9½	523 6 7
1911	326	33.0	37.5	1845 13 1	5 13 2	0 9½	494 5 11

N.B.—The above calculations of cost do not include repayment of principal, nor payment of interest on capital. The rent of the Small-pox Hospitals is also deducted.

The average length of stay in Hospital was :—

Scarlet Fever Patients, excluding cases which died ...	41.9 days
Scarlet Fever Patients, including cases which died ...	41.4 „
Diphtheria and Membranous Croup Patients, ex- cluding cases which died ...	32.7 „

DUKINFIELD MUNICIPAL BOROUGH.—Dr. Park writes :—“We have arrangements with the Hyde Hospital Authorities for four beds, two for small-pox and two for other infectious cases, but we have never had any difficulty in arranging for more cases to be admitted. The Hyde Fever Hospital has beds quite sufficient to allow of the treatment of all the infectious cases we are likely to send to Hospital. All our small-pox cases are sent to Hospital, and other infectious cases are also sent at the discretion of the Sanitary Authority.

“We use the disinfecting apparatus at the Hyde Hospital to disinfect bedding, clothing, &c., and the disinfecting baths there when required.”

ISOLATION HOSPITALS.

The Hyde Infectious Diseases Hospital receives patients from a considerable number of districts, and appears to be running a risk of cramping the accommodation which should be reserved for its own population.

The following is a list of cases admitted from other districts during the year 1911 :—

District.	Scarlet Fever.	Enteric Fever.	Diphtheria.	Small-pox.
Droylsden	5	0	0	0
Dukinfield	1	0	0	4
Denton	8	3	1	0
Bredbury and Romiley	11	0	2	0
Audenshaw	4	0	0	0
Marple	1	0	0	0
Disley	0	1	1	0
Hazel Grove	3	0	0	0
	<hr/> 33 <hr/>	<hr/> 4 <hr/>	<hr/> 4 <hr/>	<hr/> 4 <hr/>

The Medical Officer of Health states :—“The Hospital and administrative buildings have been painted and decorated during the year. The lighting is at present somewhat defective, the incandescent gas fittings seem to be worn out and ineffective. A renewal of these fittings would soon save their cost by reducing the consumption of gas.”

STALYBRIDGE MUNICIPAL BOROUGH.—The Medical Officer of Health reports :—“Unfortunately we are still without Isolation Hospital accommodation for infectious diseases other than small-pox. For small-pox we are sufficiently provided, along with the neighbouring Authorities of Ashton-under-Lyne, Hurst, Limelhurst and Audenshaw, at Hartshead. The Hospital here is a corrugated iron building, containing two wards with 10 beds in each ward, and with annexes for earth-closets and sinks, and kitchen and bath-room. The old farm house adjoining the Hospital has been adapted into an administration block for the matron and nurses, and a cottage for a caretaker.

“Some outbuildings of the farm have been transformed so as to furnish a laundry, a disinfecting chamber with a Thresh’s disinfecter, a storeroom, a dispensary, and day rooms and bedrooms for convalescents and nurses, with bathrooms and w.c. A mortuary with two slabs is provided well away from the Hospital.

"The Water Supply is derived from the surrounding land, and collected in two large tanks, from which it is conveyed by galvanised iron service pipes. The water has been analysed and declared quite fit for all domestic purposes.

"The site at Hartshead belonging to the Joint Small Pox Hospital Board is an extensive site comprising several plots, and measuring in all some 40 acres, and only a small portion of it is occupied by the Small-pox Hospital with its administration block and outbuildings, and here, I maintain, is ample scope for the erection of other blocks, in which provision should be made for other infectious diseases, notably scarlet fever, diphtheria, and typhoid fever.

"On November 26th, 1908, at the Ashton-under-Lyne Town Hall, a Local Government Board Inquiry was held *re* the application of the Joint Small-Pox Hospital Board to become a Joint Hospital Board with power "to provide, maintain and manage hospital accommodation for the reception of cases, and of infectious diseases, other than small-pox," but the sanction of the Local Government Board to this application is withheld at present, as the Local Government Board desires to be satisfied that the buildings which the Joint Hospital Board contemplate erecting will be of a sufficiently substantial character for their exposed situation.

"With the object of minimising as much as possible the individual expenditure of the constituent authorities the Joint Hospital Board invited the co-operation in the scheme of other neighbouring authorities, but up to the present their appeal has not met with success.

"It is sincerely to be hoped that before long satisfactory arrangements will be made so that the scheme may be efficiently carried out.

"The Hospital has only been in use on the rare occasions when small-pox has happened to make its appearance in one or more of the districts of the Joint Hospital Board, so that the hospital has to be kept in order and in readiness for lengthy periods during which there are no patients to be admitted. The Local Government Board have therefore suggested that during such times the hospital might well be utilised as a Sanatorium for those cases of pulmonary tuberculosis which are suitable for treatment in the open situation and the bracing atmosphere which the hospital affords. The Joint Hospital Board are quite

ISOLATION HOSPITALS.

agreeable to comply with this suggestion, but are anxious also to obtain sanction to their using the hospital for infectious diseases other than small-pox or pulmonary tuberculosis as occasion may arise."

"The disinfection station is situated at the Flatts, in proximity to the destructor. It contains a receiving room, a bath room, a dressing-room, and a discharging room, through which 'contacts' can be passed so that they are then free to mingle again with their fellowmen, while disinfection of clothing or bedding can be efficiently carried out by saturated steam under pressure in a 'Nottingham' steam disinfector, fitted with vacuum and exhaust apparatus of the latest type."

CHEADLE AND GATLEY URBAN DISTRICT.—The Medical Officer of Health reports:—"In 1903 your Council made arrangements with Withington District Council (which has now been incorporated into the City of Manchester) for the admission of cases of scarlet fever, diphtheria, and enteric fever, into their Sanatorium at Baguley. Three beds were retained, which so far have been quite sufficient for the needs of the district, unless there is a sudden outbreak. On several occasions during the year, although our beds have been occupied, urgent cases have been taken in for us by the courtesy of the Medical Superintendent. For cases of small-pox your Council has jointly with the Heaton Norris Urban District Council erected a temporary iron hospital of eight beds on the vacant land near the sewage outfall works. Although quite ready for the reception of patients it has never yet been used.

"The Barnes Convalescent Hospital send all their cases of infectious disease to one or other of the fever hospitals belonging to the Manchester Corporation.

"The Royal Lunatic Hospital: If a case should arise it is generally isolated in one of their detached houses or sent to the Baguley Sanatorium.

"The Warehousemen and Clerks Schools have their own sanatorium for infectious disease and also send their cases to the Baguley Sanatorium. Sixteen cases were sent to the Baguley Sanatorium, as compared with nine in the previous year. No cases were sent by your Council from any of the public institutions."

HOLLINGWORTH URBAN DISTRICT.—The Medical Officer of Health reports:—"The only isolation hospital in Longdendale is situated on Mottram Moor. The ownership is vested in the three

Councils of Mottram, Hollingworth, and Tintwistle. It was built solely for small-pox. Six beds are kept ready with a potentiality for 16. Only one case, and that, I understand, a very doubtful case, has ever yet been admitted. In my opinion "home isolation" has, in this district, been eminently satisfactory, and could not be improved upon by removal to hospital."

HOOLE URBAN DISTRICT.—Dr. Butt reports:—In the latter part of 1910, the following resolution of the City of Chester Public Health Committee was received:—

"That the Medical Officer of Health is authorized at any time when the four beds retained by the Hoole Urban District Council are all occupied by Hoole patients, to admit to the Isolation Hospital additional patients from the Hoole Urban District, to the number of two, provided that in his opinion there shall remain after admission, ample provision for all cases received or likely to be received from the City, and that in respect of such additional patients the Urban District shall pay to the Corporation the usual maintenance charges as fixed by the existing agreement, and in lieu of any retaining fee, a sum of 10/- per patient for each week or portion of a week that such a patient is in the Hospital."

"The terms as outlined above were accepted by the Council at the beginning of this year, and no difficulty has been experienced in obtaining hospital accommodation for such of our cases as required removal."

KNUTSFORD URBAN DISTRICT.—Dr. Garstang reports:—"The District is a member of the Bucklow Joint Hospital Board, which has a contract with the Manchester Corporation for 45 beds for ordinary infectious diseases, and 12 for small pox. It is also contemplated to retain some for phthisis, if and when a sanatorium is equipped."

WINSFORD URBAN DISTRICT.—Dr. Garstang reports:—"The District is partner with Northwich Rural, Northwich Urban, and Middlewich Urban; and has a hospital at Davenham with 34 beds in which 3 diseases can be treated concurrently. The old wooden buildings at Marbury are reserved for small-pox."

NANTWICH RURAL DISTRICT.—Dr. Turner reports:—"During the year 148 cases belonging to the Rural District Council were treated in the Joint Isolation Hospital. They were as follows:—

ISOLATION HOSPITALS.

Diphtheria	...	...	...	54 cases
Scarlet Fever	...	...	...	89 „
Enteric Fever	...	...	...	4 „
Tubercular Meningitis	...	...	...	1 case

“The hospital accommodation provided for the District consists of the following institutions:—the Nantwich Union Workhouse Infirmary, Worleston; the Nantwich Joint Isolation Hospital, Worleston; the Joint Small-pox Hospital, Ravensmoor; the Nantwich and District Cottage Hospital.

“The Isolation Hospital has been largely used. The accommodation provided there does not always suffice for the number of cases desiring admission. It would be greatly improved if some small private wards were added to the large pavilions.

“The Small-pox Hospital has been kept ready for use but has not been required. There is no provision except that at the Union Workhouse Infirmary for cases of consumption.”

WIRRAL RURAL DISTRICT.—The Wirral Joint Hospital Board supplies hospital accommodation in the form of—

60 beds at Clatterbridge Hospital for scarlet fever, typhoid fever, diphtheria, erysipelas, and puerperal fever.

20 beds at Pensby House for scarlet fever convalescents.

8 beds at Greasby Hospital for small-pox.

Representatives of the Urban District Council of Tarporley and of the Rural District Councils of Chester, Malpas and Tarvin, form a Joint Hospital Board for their respective areas. They have no Isolation Hospital, and no provision is made for the treatment of small-pox in Hospital, except in the case of the Malpas Rural District Council (see below). The County Council have granted this Board a term of three years in which to make satisfactory provision of their own, on the expiration of which time the question of contributions by the County Council will be reconsidered.

Five beds are reserved for the Chester Rural District in the Chester Isolation Hospital under agreement, for cases other than small-pox. Malpas Rural District has arranged for the isolation of cases other than small-pox in Chester Isolation Hospital, and for small-pox cases has arranged with other districts in the Whitechurch Union. Tarvin Rural District has an arrangement

for the use of 8 beds in Chester Isolation Hospital similar to that made by the Chester Rural District.

Some few districts—Ashton-on-Mersey Urban District, Bowdon Urban District, Cheadle and Gatley Urban District, Knutsford Urban District, Sale Urban District, Wilmslow Urban District, and Bucklow Rural District have all, it will be seen, made “arrangements” entitling them under certain circumstances to the use of a limited number of beds in the Baguley Sanatorium.

Other districts use hospitals outside the Administrative County at Chester, Chinley, Stockport, Monsall, Ashton-under-Lyne, Heaton Norris, and Salford under a somewhat similar “arrangement.” Handforth Urban District and Disley Rural District are without Isolation Hospital accommodation, and appear to have no “arrangement” with any other local authority, though a case is occasionally sent from the Disley Rural District into the Hyde Hospital.

Disinfection.

Steam disinfectors are provided at all the Isolation Hospitals, and at a few of the Small-pox Hospitals. At Stalybridge, though the Council have no Isolation Hospital of their own, a modern disinfecting station is provided in the town. It might be found advantageous in some other districts in the County to adopt a similar plan. When bedding and clothing has to be sent long distances for steam disinfection, considerable inconvenience and possibly hardship is apt to be caused, and when this is found to be the case people become loth to surrender articles for disinfection, and disease continues to spread.

As has been previously remarked in these reports, disinfectants continued to be used in a very haphazard manner both by Sanitary Authorities and the general public.

The market is loaded with rubbish labelled “disinfectant,” and the public is often utterly deceived, and that under the most critical circumstances by the vauntings of vendors and manufacturers backed by a pseudo-scientific certificate. The time has surely arrived when the Local Government Board should issue an official memorandum on the value of disinfectants and the circumstances which should regulate their use, and in particular their gratuitous distribution by Local Authorities. In this memorandum some hints should be given in the matter of the

DISINFECTION—BACTERIOLOGICAL EXAMINATIONS.

destruction of flies, bugs, and fleas, and Local Authorities should be recommended to institute appropriate action to this end as a most useful sanitary measure.

There are only two special paragraphs on this subject to quote from the Annual Reports.

LOWER BEBINGTON URBAN DISTRICT.—“The question of providing a steam disinfector at the refuse destructor station is under discussion. This would be a boon to the poorer inhabitants who cannot spare bedding for the length of time requisite for conveyance to Clatterbridge. Thorough steam disinfection of clothing would prove valuable in stamping out infectious disease from the neighbourhood.”

CHEADLE AND GATLEY URBAN DISTRICT.—“As far back as 1897 I was instructed to report on the various steam disinfectors then in use; after making investigations, I made a report and presented it in February, 1898; no action was taken in the matter. Since then I have in each of my annual reports drawn attention to the increasing need of a steam disinfector. This year, owing to enquiries made by the Local Government Board as to what your Council were doing in this matter, I was again instructed to report on the various steam disinfectors now in use. This I did, and after considering the report your Council approached the Stockport Corporation on the matter, and now arrangements have been made whereby all bedding and articles of clothing can be sent to the Stockport Corporation Disinfecting Station to be disinfected. I am unable to say anything as yet on the working of this scheme, owing to the short time it has been in use.”

Bacteriological Examinations:

By the courtesy of Professor Delépine I am able to give a complete and recent statement as to the arrangements made by various Sanitary Authorities in the Administrative County for the examination of specimens from doubtful cases of diphtheria, typhoid fever, tuberculosis, of samples of water, milk, various food, etc., etc., in connection with the investigation or prevention of outbreaks of disease. Commenting on the list supplied (reproduced below) Professor Delépine writes:—

“With few exceptions the authorities enumerated in the list have made use of the laboratory since 1900 (many had already begun in 1898, Crewe in 1897). Those belonging to the first

BACTERIOLOGICAL EXAMINATIONS.

group are connected with the laboratory by a sort of contract. At first this contract was based upon the payment of an annual minimum fee (M.F.) based on the population—but owing to the complication which this system entailed, I have lately suggested an annual subscription (S.) of 1s. per 1000 inhabitants. Nearly all the Authorities have accepted the second arrangement. Authorities which do not pay a subscription, have not the benefit of a reduced scale of fees.

“The 6 places which have not made a definite arrangement with the laboratory have nearly all made occasional use of the laboratory for 8 or 10 years.”

PUBLIC HEALTH LABORATORY, UNIVERSITY OF MANCHESTER.

1. *Places in Cheshire definitely connected with the Laboratory (paying an Annual Subscription [S] or a Minimum Fee [M.F.]).*

1897. Alderley Edge U.D. ... M.F.	1898. Knutsford U.D. ... S.
1899. Ashton-upon-Mersey U.D. S.	1902. Lymm U.D. ... S.
1901. Bowdon U.D. ... S.	1898. Middlewich U.D. ... S.
1901. Bredbury and Romiley U.D. S.	1903. Nantwich U.D. ... S.
1898. Bucklow R.D. ... S.	1898. " R.D. ... S.
1900. Cheadle and Gatley U.D. ... S.	1898. { Northwich U.D. ... S.
1898. Congleton M.B. ... S.	1898. " R.D. ... S.
1909. " R.D. ... S.	1902. Runcorn R.D. ... S.
1897. Crewe M.B. ... S.	1902. Sale U.D. ... S.
1899. Dukinfield M.B. ... S.	1898. Wilmslow U.D. ... S.
1900. Hale U.D. ... S.	1893. Winsford U.D. ... S.

2. *Places which are not definitely connected, but which send occasional specimens for examination.*

1898. Altrincham U.D.	1906. Hoole U.D.
1897. Bollington U.D.	1899. Hyde M.B.
1899. Hollingworth U.D.	1899. Marple U.D.

Macclesfield has an arrangement for a similar purpose with the Jenner Institute, and Lower Bebington Urban District Council send occasional specimens to the Thompson-Yates Laboratories, Liverpool, for examination.

Section V.—Midwives Act, 1902.

The scheme in operation in the Administrative County has been fully described in previous Reports.

At the close of the year 1910 there were 513 Midwives on the County Register. During 1911 there were 64 names taken off the Register for various reasons (death, removal to another County, retirement as a consequence of penal procedure of the Central Midwives Board, etc.), and 37 new names added, this bringing the net total to 487 now on the County Register.

Of those Midwives whose names have been removed from the Register, 31 were women who were in *bonâ fide* practice in July, 1901, and 33 were women who had undergone the prescribed training.

Of Midwives whose names have been added to the Register, 37 are women who have undergone the prescribed training, and only one a woman who was in *bonâ fide* practice in July, 1901.

The number of properly trained Midwives now practising in the Administrative County is thus brought up to 183, as compared with 180 for 1911, 156 for 1910, and 120 for 1909.

The number of Midwives who have been trained and certified at a Training School approved by the Central Midwives Board, is 37.57 per cent. of the total number on the County Register, as compared with 35.08 per cent. in 1911; 31 per cent. in 1910; 25.64 per cent. in 1909; 23.67 per cent. in 1908; and 21 per cent. in 1907. This increase in the number of trained women is most gratifying.

There have been over 140 changes of address, name, etc., notified during the year.

There are several registered Midwives in the County who only act as monthly Nurses and whose names consequently do not appear on the County Register. The names also of a number of Nurses in Infirmarys who occasionally take Maternity cases, or are attached to Maternity Wards, are not included in the official Register.

The number of midwives residing and practising in the several districts in the Administrative County at the close of 1911 is given in the following Table :—

MUNICIPAL BOROUGHES.

Congleton	...	...	13	Macclesfield	...	...	13
Crewe	...	...	32	Stalybridge	...	...	15
Dukinfield	...	...	13	Wallasey	...	...	49
Hyde	...	...	26				
				Total	...	...	161

OTHER URBAN DISTRICTS.

Alderley Edge	...	...	3	Hoylake and West Kirby	...	...	7
Alsager	...	...	3	Knutsford	...	...	3
Altrincham	...	...	12	Lymm	...	...	5
Ashton-upon-Mersey	...	...	5	Marple	...	...	2
Higher Bebington	...	...	2	Middlewich	...	...	4
Lower Bebington	...	...	4	Mottram	...	...	2
Bollington	...	...	4	Nantwich	...	...	3
Bowdon	...	...	0	Neston and Parkgate	...	...	5
Bredbury and Romiley	...	...	6	Northwich...	...	...	15
Bromborough	...	...	1	Runcorn	...	...	12
Buglawton	...	...	6	Sale...	...	...	6
Cheadle and Gatley	...	...	2	Sandbach	...	...	6
Compstall	...	...	1	Tarporley	...	...	0
Ellesmere Port and Whitby	...	...	5	Wilmslow	...	...	5
Hale	...	...	3	Winsford	...	...	17
Handforth	...	...	0	Yeardsley-cum-Whaley	...	...	2
Hazel Grove and Bramhall	...	...	4				
Hollingworth	...	...	3				
Hoole	...	...	3	Total	...	...	161

RURAL DISTRICTS.

Bucklow	...	...	21	Northwich	...	...	21
Chester	...	...	11	Runcorn	...	...	23
Congleton	...	...	15	Tarvin	...	...	12
Disley	...	...	3	Tintwistle	...	...	1
Macclesfield	...	...	14	Wirral	...	...	14
Malpas	...	...	8				
Nantwich	...	...	22	Total	...	...	165

The total number of midwives residing in the County and whose names appear on the County Register at the close of 1911 is therefore 487.

In the following districts there are no midwives practising—Bowdon Urban, Handforth Urban and Tarporley Urban.

The following particulars are summarised from the special Reports of the Medical Officers of Health.

MIDWIVES.**(a) Cases attended by Midwives.**

The total number of cases attended by midwives in the Administrative County during 1910 was 10,065, a slight decrease on the figure for 1910. The total number of births registered in the Administrative County was 15,083. It thus appears that midwives attended approximately 66.6 per cent. of the total births in the County, this percentage, curiously enough, being exactly similar to that for 1910. In 1909 it was 59 per cent.

(b) Keeping of Case Books, &c.

In all districts practically the whole of the midwives keep case books or registers, but a very few illiterate women who cannot either read or write naturally do not concern themselves with such records. In some cases of illiteracy the midwives keep case books and registers but rely upon the assistance of relatives and friends to keep them entered up. In one or two instances it is stated that case books are not kept or are not entered up to date.

(c) Records of sending for Medical Help.

It appears that in 1,147 cases medical help was summoned by the midwife. Taking the total number of cases attended by midwives as 10,065, this gives the percentage of cases in which they deemed it advisable to summon medical help as 11.3, a somewhat low figure.

As instancing the variations in this matter in the different districts two extreme cases may be cited.

In Dukinfield there were 402 cases attended by midwives, and 108 records of sending for medical help; whereas in Crewe out of 860 cases there were only 13 such records. The state of affairs in Crewe appears to call for special inquiry, as similar figures were reported last year for this Borough.

(d) Taking of Pulse and Temperature.

The remarks under this heading are of various characters, and probably afford the best index obtainable to the capability of the midwives practising in the County.

In the Borough of Congleton it is stated that this is done "by all who can read or write."

In Crewe it is stated that "only 8 out of 32 do so."

In Dukinfield Dr. Park says "Ten of the women out of 13 can do this."

From Macclesfield it is reported—"No, some cannot read a thermometer."

In Stalybridge it is stated "that this is not systematically done."

In Wallasey the midwives perform these acts "in almost every instance."

In Ashton-upon-Mersey it is stated that "this is not done."

At Bredbury and Romiley and at Higher Bebington the midwives do not carry out this rule.

In Buglawton Urban District, Dr. Davidson says—"Yes, by those who can read and write."

In Cheadle and Gatley Urban District there are only two midwives. "One, who is very old, does not take pulse and temperature."

In Lymm "two take temperature and none take pulse, but no record is kept."

The Mottram midwife is deficient in both respects.

In the Nantwich Urban District it is stated that only one midwife out of the three is capable of taking pulse and temperature.

In the Northwich Urban District the midwives do not observe the rule.

In Wilmslow Urban District all the midwives carry out these duties with one exception.

In Winsford it is stated that "thermometers and catheters are beyond the capacity of many of the midwives."

MIDWIVES.

In Congleton Rural District it is stated that these duties are not regularly done, because of the ignorance of the midwives.

In Macclesfield Rural District it is reported that the older women are unable to observe the rule.

In Malpas Rural District it is remarked "that complete ignorance of the use of the thermometer and the taking of the pulse seems to prevail."

In Nantwich Rural District "the untrained women are incapable of doing this."

In the Runcorn Rural District it is stated "this is by no means universal yet."

In several cases it is reported that the midwives *say* they take and record pulse and temperature. It is the duty of the Medical Officer of Health under the scheme propounded by the County Council to inspect the books and appliances of the midwives, and this inspection coupled with the application of a simple test, should reveal whether the midwives can and do carry out this rule.

Attention must be called in the plainest manner to this disclosure of dangerous ignorance. Medical Officers of Health are reminded that midwives who cannot take pulse and temperature are bound to contravene at times the rules of the Central Midwives Board, and it is their duty to report to the County Medical Officer of Health all cases where midwives do not comply with these rules. It is impossible for a midwife to comply with the rule as to the sending for medical assistance when the temperature is above 100.4, or there is a quickening of the pulse, unless she can take pulse and temperature, and inasmuch as possible death from puerperal fever is involved, the matter is a most serious one.

(e) Appliances.

It may be stated generally that most of the illiterate midwives either do not possess or cannot reliably use catheters or vaginal douches, and the Medical Officers generally hold that this type of woman are better without such appliances.

The large majority of the replies to the enquiry as to whether the appliances required by the rules to be kept by each midwife are actually provided and kept clean and in good order, are in the affirmative.

In Crewe it is stated that the rule is observed with five exceptions.

In Stalybridge, Dr. Hancock says:—"A few are without catheters, and in my opinion better without them."

In Nantwich Urban District it is stated that "this is only satisfactory in one case."

In Winsford, Dr. Garstang says:—"In nearly all improvement takes place every year."

In the Nantwich Rural District, Dr. Turner says that "the untrained women take only an antiseptic, a nail-brush, and soap with them."

(f) Means of Disinfection.

The facilities afforded in the various districts for the disinfection of midwives who have been attending cases of puerperal fever or other infectious disease, or cases in which there are foul smelling discharges, vary very considerably. For these, therefore, as well as for other purposes, it is very desirable that districts at present unprovided with means of disinfecting the clothing of the midwives practising in their areas should make arrangements to this end as early as possible. The following districts have no such provision, viz., Alsager, Ashton-upon-Mersey, Bollington, Bowdon, Compstall, Ellesmere Port, Hale, Knutsford, Lymm, Middlewich, Mottram, Runcorn, Sale, Sandbach, Winsford, Yeardsley, Bucklow Rural, Congleton Rural, Disley Rural, Macclesfield Rural, Tintwistle Rural, and Wirral Rural.

(g) Puerperal Fever.

In 16 instances throughout the whole of the Administrative County cases of puerperal fever are known to have arisen in cases attended by registered midwives. The Medical Officers of Health have uniformly carried out the most rigorous measures on the occurrence of such disease in the practice of a midwife.

(h) Penal Procedure.

Six cases of breach of rules of the Central Midwives Board while in attendance on lying-in women were reported to the Midwives Act Committee during the year.

MIDWIVES.

Four of the cases were remitted to the Board, with the result that the names of two women were removed from the Roll and two midwives severely cautioned.

The two other cases were (a) employment of an unqualified substitute, and (b) attendance by an unregistered woman. In both cases the Committee cautioned the women, the leniency shown in the latter case being due to the extreme poverty of the offender; this woman also gave an undertaking to retire from practice.

Proceedings were taken against 2 unqualified women at Bunbury and Calveley for acting as midwives, and convictions were secured.

(i) Shortage of Supply.

In Bowdon Dr. Duggan says: "There is a great want of a certificated midwife in the Vicarage Lane district where there is a population of about 600, chiefly working class, and there is no midwife nearer than twelve miles."

At Nantwich, 5 midwives have died or removed recently, and as there are only 3 residing in the town, two of whom are illiterate, there is a great shortage in the district.

In Tarporley Urban District there is also a shortage of midwives.

In Congleton Rural District there are midwives required at Smallwood and Mowcop.

In Macclesfield Rural District for the present it is not anticipated that very great inconvenience will be caused, although in the hilly districts of Wirral, Wildboarclough, Macclesfield Forest there is a distinct shortage. The Medical Officer of Health states that in this widely scattered district the "handy woman" is of great value. There is not enough regular work of this kind for anyone, and few women would be charitable enough to undergo the severe hardships often necessitated by this work in the hills for the few shillings received.

In Northwich Rural Area, Weaverham District suffers from lack of midwives.

In the Runcorn Rural District the Medical Officer of Health remarks that he does not consider the district too well supplied with midwives, but it is better supplied now than it has ever been.

The combination of district nursing with midwifery is aiding largely the solution of this problem of shortage. In many areas there is not enough work to maintain a woman who depends on midwifery alone. Work under the Notification of Births Act would be most appropriate for properly trained midwives.

In view of the fact that the Revised Rules of the Central Midwives Board contained a number of important alterations, which might be a long time before they filtered through to those responsible for carrying them out, your Midwives Act Committee authorised me to issue the following notice to all midwives practising in the Administrative County, and to all Medical Officers of Health.

“The attention of Practising Midwives is hereby called to certain important alterations in the Rules of the Central Midwives Board which they are now required to carry out. This circular does not pretend to set out these New Rules in full, and it will be necessary for Midwives to obtain a copy of them. They can be obtained from Messrs. Spottiswoode and Co., 5, New Square Street, London, E.C., price 7d., post free, and the Third Edition should be requested. The necessary forms may also be obtained at the same address, price 1d. each, post free, or a supply can be had at a less price; when writing for Forms it should be stated exactly which ones are required.

The following are some of the important additions and alterations contained in the New Rules:—

1. Every Midwife must keep her nails cut short and preserve the skin of her hands as far as possible from cracks and abrasions.
2. When attending to her patients she must wear a clean dress of washable material that can be boiled, such as linen, cotton, &c., and over it a clean washable apron or overall. The sleeves of the dress must be made so that the midwife can tuck them well up above the elbows.
3. The bag or basket containing appliances must be furnished with a removable lining which can be disinfected.
4. Efficient antiseptics for such purposes as:—
 - (a) Disinfecting the hands;
 - (b) Douching in special cases;
 - (c) Cleansing the infant's eyelids—must be taken by the midwife to all confinements.

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NOTE.—For disinfecting the hands and appliances the midwife may use Perchloride of Mercury, 1 in 1,000, Lysol, 2 teaspoonfuls to one quart of water, Izal, 2 teaspoonfuls to one quart of water, &c.

For douching Perchloride of Mercury should not be used except under medical advice ; Lysol or Izal (one teaspoonful to one quart of water) is to be employed.

For cleansing infant's eyes Boracic Acid (2 ounces Powdered Boracic Acid well shaken up with a quart of boiling water until all is dissolved) is to be used. See pages 42-3 of New Rules as to method of using Boracic Acid for bathing child's eyes.

As a lubricant to be used for the hands, &c., Glycerine of Perchloride of Mercury, 1 per 1,000, is the best. If ointments are used they should be obtained in collapsible tubes, and the caps kept properly screwed on.

The midwife's bag should be disinfected once a week (including the handle) by sponging it carefully out with Perchloride of Mercury, 1 per 1,000 ; the lining should be changed at least once a week, and at once if soiled.

5. If a midwife has been in attendance whether as a midwife or as a nurse upon a patient, or in contact with a person suffering from puerperal fevers or any other condition supposed to be infectious, or is herself liable to be a source of infection, she must disinfect herself and her appliances, and must have her clothing thoroughly disinfected to the satisfaction of the Local Supervising Authority before going to any other maternity patient.
6. For washing the patient's external parts the midwife must use material which has been boiled or otherwise disinfected before use.
7. If a midwife should for any reason continue her attendance after the tenth day the fact must be noted in her register with the explanation of the reason.
8. The midwife shall take and record the pulse and temperature of the patient at each visit.
9. In the case of a child born apparently dead the midwife must carry out the methods of resuscitation (or reviving) which have been taught her.

10. As soon as the child's head is born, and if possible before the eyes are opened, its eyelids must be carefully cleansed (see Rule as to method of cleansing).
11. After laying out or assisting to lay out or prepare a dead body for burial, every midwife must notify the Medical Officer of Health for the district, and must undergo adequate cleansing and disinfection as under paragraph 5.
12. Medical help must be advised on the proper form filled up and handed to the husband or nearest relative or friend present in the following cases in addition to those mentioned in the old Rules :—
 - (a) In case of a pregnant woman when there are any of the following complications :—
 - Fits or convulsions.
 - Purulent (or mattery) discharges.
 - Sores or the genitals.
 - (b) During labour when there are any of the following complications :—
 - Fits or convulsions.
 - A purulent (or mattery) discharge.
 - Sores of the genitals.
 - (c) During lying-in when fits or convulsions take place.
 - (d) In the case of the child when there is any discharge from the eyes however slight.
13. The form used for notification of still-births has been slightly altered and it is necessary now for the midwife to state in that notification whether the still-born child was delivered by her or was born before her arrival.
14. Midwives must afford officers of the Local Supervising Authority every reasonable facility for inspection of registers, bag of appliances, place of residence, &c.
15. Midwives are now liable to be suspended from practice by the Local Supervising Authority, when such is necessary for preventing the spread of infection, whether the midwife has contravened (or broken) any of the Rules laid down by the Central Midwives' Board or not.

16. The new Rules contain highly important instructions as to precautions to be observed in inflammation of the eyes in new-born children and cancer of the womb, and every midwife should at once make herself familiar with these instructions.

‘The Central Midwives’ Board is determined as far as lies in its power to secure the strict observance of its Rules and Directions, and to punish any failure to comply with them even in cases where no harm can be proved to have followed from their neglect.’”

Section VI.—Water Supply.

The following is as complete a statement as it is possible to collect at the present with reference to the various water supplies in the Administrative County. I am collecting information on this question as fully as possible for I am not without hope that at some date Parliament will have time to adjust obvious wants of equity in this matter and to prevent the haphazard seizure and appropriation by Companies and Local Authorities to their own exclusive purposes of what should be a public supply in the most liberal sense of that word. If such a time ever arrives information of this nature will be exceedingly valuable.

CONGLETON MUNICIPAL BOROUGH.—This Borough derives its supply from springs in the quicksands on the west side of the pumping station at Forge Lane within the Borough. It is stated that there are only a few isolated farms in the district which are not supplied from the mains.

CREWE MUNICIPAL BOROUGH.—“The water supply is owned by the London and North Western Railway Company, and is obtained from artesian wells at Whitmore, Staffordshire. The quality of the water for drinking purposes is excellent, although somewhat hard for domestic and laundry use. The supply has never failed even after the most prolonged drought.”

DUKINFIELD MUNICIPAL BOROUGH.—“The domestic water in Dukinfield is excellent in quality and abundant in quantity. During the dry summer of 1911 there was no shortage.

Dukinfield is joint owner, together with the Boroughs of Ashton-under-Lyne, Stalybridge and Mossley, of the Waterworks in the Swineshaw and Chew Valleys. The present capacity of the reservoirs owned by the Joint Waterworks Committee is about 900 million gallons, and when the new reservoir in the Chew Valley is completed it is estimated that the capacity will be increased by 200 million gallons. The water, at present, comes from the wells, springs, and streams in the Swineshaw Valley and is free from any risk of pollution. Although the water is soft there have been no complaints of lead poisoning during the year. In the ensuing year, 1912, the whole of the domestic supply of water for this district will be filtered and treated."

HYDE MUNICIPAL BOROUGH.—"A constant supply of water is obtained from the Manchester Corporation (Woodhead supply). The higher parts of Newton and Gee Cross do not yet derive their supply from this source. Additional works are now in progress, and are almost completed to supply these parts of the Borough with Woodhead water. There have been no complaints of the action of lead, and no samples have been analysed during 1911."

MACCLESFIELD MUNICIPAL BOROUGH.—The report of the Medical Officer of Health had not been received at the date of writing this report.

STALYBRIDGE MUNICIPAL BOROUGH.—"Along with the neighbouring Boroughs of Ashton-under-Lyne, Dukinfield and Mossley, Stalybridge is supplied with an abundance of pure water from extensive reservoirs which have a holding capacity of close upon 900,000,000 gallons, and the work of constructing a large reservoir in the Chew Valley, for water for compensation purposes, is now proceeding.

"It is expected that this new reservoir, which will have a capacity of about 200,000,000 gallons, will be completed early in the year 1913.

"The supply to Stalybridge is almost wholly derived from the Brushes Reservoir, but portions of the Borough, namely, Heyrod, Hough Hill, and the district of Mottram Road above Bower Fold, are supplied from the Lower Swineshaw Reservoir, which also supplies the adjacent Borough of Mossley. The gathering ground at Swineshaw is 1,300 acres in extent, and has an elevation of 884 feet. The Higher Swineshaw Reservoir has a depth of 53 feet and a capacity of 168,908,000

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gallons, and it supplies both the Lower Swineshaw Reservoir and the Brushes Reservoir. The gathering ground at Chew is 1,730 acres in extent, and has an elevation of 1,750 feet.

“It must have been most gratifying to the inhabitants throughout the whole district of supply that the Joint Waterworks Committee had so carefully supervised the storage of water that they were able to continue the usual supply throughout the dry summer while most districts were suffering from great scarcity of water, necessitating very serious curtailment of supply during many weeks.

“An important and what will prove to be a most beneficial innovation is now being introduced into the Joint Waterworks Committee’s system of water supply, namely, the installation of filters to deal with the whole of the water distributed from the Greenfield and Swineshaw Valleys, so that, when this work is completed and the distributing mains have been flushed out clear of all deposits, the inhabitants throughout the whole area of supply will have the advantage of pure water not only free from suspended matter but also with its acidity neutralised so as to render it incapable of absorbing lead and insidiously causing lead poisoning.

“During the past year no case of lead poisoning, attributable to the water supply, has been brought to my notice.”

WALLASEY MUNICIPAL BOROUGH.—This town is fortunate in possessing a two-fold source of supply, viz., from the Liverpool Corporation (Vyrnwy mains) and from its own boreholes.

In the case of the Wallasey Waterworks the water is pumped from 4 bore-holes at Liscard which have been constructed in pairs. Two were constructed close together, *i.e.*, about 6 or 8 feet apart in 1894. One of these is 600 feet deep, and one 800 feet deep. Two others were bored in 1892, also close together, one 800 feet, one 900 feet. The two pairs of bore-holes are worked separately. The bore-holes go down through a thin layer of clay, then a light coloured sandstone (yellowish), then a darker sandstone (red), then a light coloured vein, and so on. The bore-holes are lined with iron pipes to a depth of about 300 feet. Specimens of the material obtained on boring are kept at the pumping station, and trays containing about 40 lots of these taken at different depths may be seen. The amount pumped is about $1\frac{3}{4}$ million gallons per day, sometimes two millions, and that has been

pumped for over 2 years. The following table is given by the Medical Officer of Health.

Volume of water supplied from 1st January, 1911, to 31st December, 1911, 870,324,243 gallons, made up as follows:—

From Wells at Liscard	... ..	596,574,243 Galls.
From Vyrnwy	... ..	273,750,000 „
Average supplied per day	... ..	2,384,450 „
Average consumption per day per head	... ..	31'37 „
Divided as follows:—		
Supplied by Meter	.. ..	6'23 Galls.
Supplied to Shipping	... ..	'15 „
Watering Streets and Road Making	... ..	'38 „
Flushing Sewers by Hose and Cart	... ..	'33 „
Domestic and other purposes, including		
Drinking Fountains	... ..	24'28 „

The quantity of water used for flushing sewers and drains during the year was 9,058,000 gallons.

ALSAGER URBAN DISTRICT.—“In January it became necessary to increase the pumping hours to keep the district supplied and notwithstanding the fact that pumping was continuous for 24 hours at a stretch the supply was unsatisfactory, and on March 14th there was a decided shortage of water, many of the houses situated at the higher levels were at times absolutely without drinking water and could not flush their water closets, and as a natural sequence complaints were numerous. This shortage became so serious that on March 18th a Special Council Meeting was called to consider the situation. It was then decided that water must be obtained from some other source to supplement the existing supply, and this was got from a well belonging to the late Mr. Parkes, of the Alsager Arms, and what threatened to be a water famine was averted. After a time the Council considered it more expedient to obtain water from the Staffordshire Waterworks, which supplies the adjacent Parish of Lawton. Since then an efficient supply has been maintained, though I believe it is a precarious one, as there is the possibility of the Staffordshire water being cut off should circumstances arise which compel the Company to reserve their supply for more central use.

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“During the year there have been numerous complaints of the Alsager water, owing to its cloudiness and turbidity, this amounting to a thick sediment in the bottom of vessels on standing. The appearance of this sedimental matter is intermittent and at present the water is clear. Several specimens have been sent for analysis, both chemical and bacteriological. The two latest analyses—taken in May—made by the County Analyst states: “This is a hard but good water, and before being used for the supply of a town it should be softened by means of lime, so as to reduce the hardness to about 6 degrees.” This is dated May 26th, 1911.

“Another analysis made at the same time by the Clinical Research Association sums up: “These results may in our opinion be regarded as fairly satisfactory for a shallow well water. The water is somewhat hard.”

“The Council having decided that it was very desirable for the district to possess a good local water supply engaged the services of Mr. Soame—an expert Engineer—who fixed on a site where he considered a sufficient supply of good water could be obtained.

“The Council then applied to the Local Government Board for a loan of £500 for experimental work in boring for water at the site mentioned. To enquire into the matter the Local Government Board held an Inquiry on November 1st, at which the matter was gone into and the necessity for a new water supply lucidly pointed out.

“The Council now anxiously await the sanction of the loan, as a good permanent and efficient supply is imperative for the welfare of the village.

Linley water supply.—“As this is a tank built at Linley and kept full by water pumped from the Alsager supply—at night—it followed that when there was a shortage at Alsager Linley was without proper drinking water and many of the inhabitants fell back on the old wells and ran the risk of acquiring enteric fever.

“The houses have been connected up with the main pipe from the Linley tank, and since the advent of the Staffordshire water it has been possible to efficiently supply this district.”

ALTRINCHAM URBAN DISTRICT.—“The North Cheshire Water Co. derives its water from the Manchester Corporation Waterworks, and though during the drought the supply was curtailed during the nights, the quality was maintained.”

ASHTON ON-MERSEY URBAN DISTRICT.—“The water supply is from the North Cheshire Water Co., is constant and is of very good quality and of sufficient quantity except when during the last summer there was very little rainfall, and great care had to be taken to keep any supply at all.

“Some of the outlying farms are supplied by wells, the water being good and the springs in the sand belt.”

HIGHER BEBINGTON URBAN DISTRICT.—“The district has a constant supply of water provided by the West Cheshire Water Company. The hardness of this water, which is derived from wells in the new red sandstone, has been a cause of complaint amongst the consumers for many years. As the result of the West Cheshire Water Act, 1911, the district will be supplied with water which will be only about half as hard as that formerly supplied. The saving in soap, fuel and plumber’s work will be advantageous to the cottagers and especially to those who do laundry work.”

LOWER BEBINGTON URBAN DISTRICT.—“There is a constant supply laid on from the mains of the West Cheshire Water Company. The water supplied by this company is unduly hard, and failing by negotiations to obtain any concession from them, you joined with other dissatisfied consumers in organising opposition to their attempt to obtain sanction to certain works which they had carried out and to get authorisation to raise additional capital. The result of your action was the insertion of the following clause in the West Cheshire Water Act, 1911:—“From and after the first day of November, 1912, all water supplied from the Hooton pumping station of the Company to consumers within the Company’s limits of supply shall be softened by Clark’s process or such other process or method as shall be at least as applicable and efficacious, or so mixed with other water that it shall not exceed ten degrees of hardness according to Clark’s scale, and the Company may enter into such arrangements and generally do all such acts as may be expedient to enable them to supply such water from the said pumping station. Provided that if the Company make default in complying with the provisions of this section it shall be lawful for the High Court of Justice upon the application of the County Council of the

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County Palatine of Chester, to make a mandatory order or such other order as the circumstances of the case may require." The County Council also obtained powers to inspect the works and take samples at all reasonable times. The process of opposing the Company was an expensive one, but your rate-payers will reap the benefits resulting from the softening of the water."

BOLLINGTON URBAN DISTRICT.—"The water supplying the district is taken from two bore-holes in the neighbouring parish of Rainow, situated at Lowerhouse and Dane Bent. These are situated at altitudes of 794 feet and 750.75 feet respectively.

"Taking into consideration the character of the past summer and early autumn, unequalled for a great many years for its long continued drought, the supply has carried the district through very well. That some inconvenience was caused by the diminished amount of water available there is no doubt, but fortunately nothing more than this occurred.

"The shortage began to make itself felt about the middle of July. From this date the water supply was cut off between the hours of 11 p.m. and 5 a.m. Later on, in the middle of August, it was found necessary to still further curtail the hours of service, viz.: from 7 p.m. to 6 a.m., and this curtailment was continued until the latter part of October.

"Early in August, the drought still continuing and the supply yielded by the bore-holes diminishing, it was deemed advisable to assist matters by the aid of a pump. Fortunately, one was found close at hand; Messrs. Hammonds, of Pott Shrigley, having one not then in use, they agreed to hire it to the Council. It was fixed at the Dane Bent bore-hole on August 12th.

"The effect of this was immediate and satisfactory. The pump was in use each day and increased the supply by 27,000 to 28,000 gallons a day.

"The supply, though very much curtailed, especially during the latter part of the period, causing in this way some general inconvenience, was better perhaps than was to be expected.

"That the test was a severe one and that it proves that the supply is not a sufficient one for a prolonged dry season

there can be no doubt. Further, it must not be forgotten that the demand is increasing each month. Water closets are being put in in increasing numbers, as quickly as it is possible, to do away with the privy middens which were general up to a few years ago. This sanitary improvement alone makes a large demand for more water. It is thus quite impossible to allow the present supply to remain stationary for much longer. Further means of increasing the amount from the existing bore-holes or new sources of supply must be found. Attention has been directed to this most important matter in previous Annual Reports of your Medical Officer of Health.

“With the exception of the dates before-mentioned the supply has, of course, been constant.

“Certain areas, viz.: those in Long Lane and at the Windmill, Kerridge, are not supplied by the town's water. These have been found to be situated too high up and too isolated to arrange for up to the present. These two areas will account for about 17 houses in all. Four other houses—situated in Clarke Lane—are also too isolated for the supply to reach them. All these houses are dependent on wells for their water. The matter of these houses is at present under the consideration of your Committee.”

BOWDON URBAN DISTRICT.—“The water supply of the district, except a few outlying farms and cottages, is from the North Cheshire Water Company and is of excellent quality and quantity.

“The few outlying farms, &c., derive their supply from wells and these are unpolluted and sufficient for the requirements.”

BREDBURY AND ROMILEY URBAN DISTRICT.—“Our chief supply is from the Manchester Corporation reservoirs at Woodhead. This is a very good drinking water, but complaints have been made of a yellowish-red sediment being found in it at times; this is fine peat fibre, and is not injurious to health, but is unsightly, and the water requires filtering. It is said to have been more noticeable during the autumn, on account of the water supply being turned off owing to the long dry summer. A further supply has been arranged for, and a new main, mentioned in my last year's report, is being made from the Stockport New Kinder Waterworks; it is being laid from Dooley Lane, Bredbury, to Barrack Hill. It is

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anticipated that this will give us an abundant supply, and at a higher level than the Manchester reservoirs. It is in course of completion, and will probably be open for use early in 1912."

BROMBOROUGH URBAN DISTRICT.—"There is a constant supply of water from wells at Hooton in the new red sandstone owned by the West Cheshire Water Company. Frequent reference was made in previous annual reports of the late Medical Officer to the hardness of the water distributed to the consumers. In company with other Wirral districts who use the same water you opposed the West Cheshire Water Bill with the result that a clause was inserted in the Act compelling the softening of the water supplied."

BUGLAWTON URBAN DISTRICT.—"The water supply was satisfactory, and at no time during the dry weather was there any scarcity. Two samples were examined and the Public Analyst found them to be pure."

CHEADLE AND GATLEY URBAN DISTRICT.—"The supply is from the Corporation of Stockport: a few outlying houses are supplied by wells."

COMPSTALL URBAN DISTRICT.—"The water for the Urban portion is obtained from upland springs, and stored in two reservoirs at the upper part of the Urban portion of the district. Nearly all the houses in the Urban portion are supplied by the two reservoirs. The water is clear, palatable, and wholesome. There is an abundant supply."

"During the summer there was a shortage, owing to the drought after the reservoirs had been cleaned and limed, but this was not of a serious nature, and the district was better supplied than most neighbouring districts. There was no curtailment of the supply."

"The Rural parts obtain their water from wells and springs. These have been inspected, and found free from contamination."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"A constant supply of water is provided from the deep wells in the new red sandstone which are the property of the West Cheshire Water Company. The hardness of this water has been a frequent source of trouble in the district. Unfortunately also the supply has been limited, but this is due to the laying

of mains not having kept pace with the extremely rapid development of the town. The Water Company are rectifying this matter."

HALE URBAN DISTRICT.—"The water supply to practically the whole of the district is from the Manchester Corporation reservoirs at Woodhead and is satisfactory. Some small parts of the district are dependent for their water upon springs, but it is the aim of the Council, at the earliest possible date, to replace these with "town's water." During the year 14 houses which were dependent upon springs have been supplied with "town's water."

HANDFORTH URBAN DISTRICT.—"There is a good supply from the Stockport Corporation Waterworks. Last summer this was considerably curtailed owing to the drought."

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—"The very dry season of 1911 was the means of causing inconvenience through the shortness of water, but it is to be hoped that the completion of the Kinder Scheme by the Stockport Corporation will enable them to give a better supply in the future."

HOLLINGWORTH URBAN DISTRICT.—"This is a constant public service. The water is obtained from a spring rising high up the Arnfield Clough. Analysis has repeatedly shown the water to be of exceptional purity. It is slightly acid, and no doubt must to some degree possess plumbo-solvent properties. The short service pipes in use are well tinned, and no trace of lead has ever been detected in this water. In parts not supplied with this public service I know of no instance nor isolated dwelling not in possession of a proper private supply of pure drinking water."

HOOLE URBAN DISTRICT.—"There is an ample supply of good water, the whole of the district being supplied by the Chester Waterworks Company."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"The entire district is well supplied with water by the Hoylake and West Kirby Gas and Water Co., Ltd. The source of supply is deep wells in the new red sandstone at Grange Hill and Newton. The old or Cranage Hill bore-holes are about 22 yards apart, and the Newton one was constructed in 1908. The depth of the bore-holes is about 280 feet. All the bore-holes are lined, but it is not known to what depth. The water is pumped from Newton to a closed reservoir at Cranage Hill

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which contain from two to three days' storage. There is a constant supply of about 44 gallons per head per day for all purposes, trade, municipal and domestic. A large quantity of water is used for watering roads and flushing sewers and very little for trade purposes. The total hardness of the mixed water from the 3 bore-holes is about $13\frac{1}{2}$ degrees, but it varies slightly according to the bore-hole it comes from. Permanent hardness is about 4 degrees Clarke. The analyst to the Company reports that an examination of a sample of the water in May, 1911, had the following composition:—

Expressed in Parts per 100,000.

Total Solid Matter in Solution	...	...	...	...	33.6
Oxygen required to Oxidize in 15 minutes	...	...	...	...	0.002
" " " 3 hours	...	...	...	...	0.005
Ammonia	...	...	...	...	0.000
Ammonia from Organic Matter by distillation with Alkaline Permanganate	...	...	...	...	0.001
Nitrogen as Nitrites	...	...	...	...	0.000
Nitrogen as Nitrates	...	...	...	...	0.393
Combined Chlorine	...	...	...	...	6.4

HARDNESS.

Expressed in Degrees.

Temporary Hardness	...	...	...	...	6.6
Permanent Hardness	...	...	...	...	5.8
Total Hardness	...	...	...	...	<u>12.4</u>

“The water was clear, bright, colourless, odourless, and contained no organisms or pathogenic germs. It was quite free from lead and copper, and from solid matter in suspension. In my opinion, it is in every way an excellent water for drinking and domestic use.”

KNUTSFORD URBAN DISTRICT.—The supply is from a stream rising near Alderley Edge. A new plant for ozonising this water has recently been erected but it is not known whether it is yet in working order.

LYMM URBAN DISTRICT.—“This is in the hands of a private company, and is laid on throughout the district where possible, that is with the exception of a few outlying farms and cottages. The supply, derived from Artesian borings, is pumped up to a water tower for delivery under pressure. The supply is constant and there was no shortage even during this last most trying summer. Analysis gives the result of a good, potable water.”

MARPLE URBAN DISTRICT.—“The water supply of Marple is derived from the Cheshire hills, collected into reservoirs at Lyme, and pumped into our own reserve at Wybersley. In a very short time the Stockport Corporation, who own our water supply, will have finished a main from Kinder to Carr Brow, and by a junction there to Marple main.

“The water will flow by gravitation to your reservoir, and thus ensure a constant supply, and do away with the expense of pumping.

“The water is pure and good, although scarce in the very dry weather. That I believe will be avoided in seasons to come.

“No complaints and no impure springs have rendered any steps necessary.”

MIDDLEWICH URBAN DISTRICT.—“There is a good and plentiful supply of excellent water to nearly every house in the district; only six houses, situated a long way from mains, are not supplied with water from the town’s supply.”

MOTTRAM URBAN DISTRICT.—“The district has an excellent water supply, derived from springs, near Arnfield, which run into the Manchester Corporation reservoir in that district.”

NANTWICH URBAN DISTRICT.—“The water supply from Baddiley Waterworks was very short during the prolonged drought in the summer. It was found necessary to put down a temporary plant to pump from the mere to supply the district. Pumping operations continued for over 20 weeks.

“New water supply.”—A Local Government Board enquiry was held in February, and a loan of £3,600 was sanctioned for trial works at Madeley. The contract for sinking a well and bore-hole has been let, and the work is now progressing.”

At the date of writing this report it is understood that these borings have been abandoned.

NESTON AND PARKGATE URBAN DISTRICT.—“The water supply is the property of the Council, who charge a very low rate for its use to the consumers. It is pumped from a deep well in the new red sandstone and distributed by gravitation. The supply is a constant one. During the past year a breakdown was experienced in the pumping apparatus which had

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been in use for nearly 40 years. However, this resulted in very little inconvenience to anyone, as the Liverpool water mains from Lake Vyrnwy pass through the district alongside your own mains. By arrangement with the Liverpool Corporation the Vyrnwy water was turned into the Neston mains until such time as the pumps at the well were again available. Later your Council wisely decided to allow the connection between the two sets of mains to remain permanently to obviate any discomfort which might arise from a similar breakdown in future. Fears are sometimes expressed that with the growth of the district the supply may become too limited to satisfy the increasing demand. If this should happen at a future date, your Council have taken steps to secure a supply from the new mains for Birkenhead which will also pass through your district. From the above it may be gathered that there is no need for anxiety about the Neston water supply.

"The water is described by the Analyst as a hard, but first class water. It has 13 degrees of hardness before boiling, and this is reduced to 4 degrees by boiling."

NORTHWICH URBAN DISTRICT.—"There is a trade supply (only) from Wade Brook and Castle Wells.

"The whole of the domestic water is supplied by constant service from a reservoir at Hartford which is fed by springs at Cote Brook near Tarporley. The dry summer and perhaps subsidence, rendered the shutting off of the supply at night necessary at times.

"Five samples were taken, the first showed (taken from an office tap) contamination with bacillus coli: immediately two samples were taken from the gauge house and the reservoir and examined by Professor Delépine bacteriologically and chemically—they were perfectly right and show a rather hard water of remarkable purity. The samples were taken owing to the outbreaks of enteric fever.

"There have been no complaints as to plumbo-solvent action, nor is any part of the district without a proper supply."

SALE URBAN DISTRICT.—"Though there was a slight shortage of water supplied by the North Cheshire Water Company during the autumn the quality was good."

SANDBACH URBAN DISTRICT.—“This is an upland surface supply and is artificially softened by Clarke’s process. It is said to be a good water in every way.

TARPORLEY URBAN DISTRICT.—“There has been no alteration as to water supply. It is with the possible exception of a few houses satisfactory. Tarporley Urban District is supplied by the Liverpool Corporation from their Lake Vyrnwy supply, the water mains passing through this district. The out-lying parts are supplied by springs, dip-wells, and ordinary wells. All the supplies are constant and wholesome, and fairly free from the risk of pollution. The Vyrnwy water is a very soft water, and iron pipes are in general use. No contamination of the water by lead has occurred.”

WILMSLOW URBAN DISTRICT.—“The water supplied by the Stockport Corporation is obtained in Wilmslow from bore-holes in the new red sandstone.

“Before distribution it is submitted to a softening process, in which lime only is used, in a plant called the Archbutt Deely.

“As raised from the bore-holes, the hardness is 14 degrees (Clarke’s scale). After treatment the hardness is 7 degrees.

“The supply is constant, good, and ample for all requirements.

“There was some restriction during the hot, dry summer.

“Some parts of the Rural area are supplied from wells.

“No complaints of quality have been made during the year.

“No samples have been analysed.

“It is expected that the district will shortly be supplied, either in whole or part, from the new reservoir at Kinder. The water from this source will not require any softening treatment.”

WINSFORD URBAN DISTRICT.—“The supply here is from springs of good quality and free from liability to pollution; it is a constant supply and is conveyed to all parts of the district.”

WATER SUPPLY.

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—“During the year your Council gave me permission to have the public and private water supplies of the district analysed. There are sixteen different sources of water supply, which are made up of the Council’s supply at Diglee and Stoneheads, with springs and wells which in some cases supply individual houses. As the result of the analysis, four sources of supply were found to be contaminated with organic matter, which with one exception was said by the Analyst to be of vegetable origin. This vegetable organic matter does not have the same significance as animal organic matter. Nevertheless, water supplies ought to be kept as free as possible from decomposing vegetable matter. Amongst the four water supplies condemned as unfit for domestic purposes, was your reservoir at Stoneheads. Immediately this was discovered, the water was run out, and the reservoir thoroughly cleaned. Afterwards another sample was taken and the Analyst described this water as of “excellent quality and admirably suited for a drinking water and other domestic purposes.” In two other cases, the cisterns in which the water was collected needed attention. After being thoroughly cleaned, the water was found to be quite satisfactory. The remaining one could not be remedied, so the Council’s water has been connected to the house.”

BUCKLOW RURAL DISTRICT.—The Inspector reports:—“The conditions are of a permanent nature, and there is not likely to be any change beyond an occasional extension of a main as new houses are built in those areas which possess public supplies. My description in last year’s report is likely to stand accurate for many years to come.

“Water certificates were granted for 49 houses, of which 46 were on public mains. The other 3 were supplied from wells, the water being certified good on analysis. Mains were extended a considerable distance in Dunham Massey to supply the out-lying hamlets of Woodhouses and Lowerhouses.”

CHESTER RURAL DISTRICT.—“This is supplied by the Chester Water Company, by the Wrexham Water Company, and by the West Cheshire Water Company. The out-lying parishes are supplied by springs, dip-wells, and ordinary wells. These waters are fairly wholesome and sufficient, except in the parishes of Dunham Hill and Mickle Trafford and Ince. The water supplies of Dunham Hill and Ince are now under consideration. No contamination of the water by lead has occurred.” A special note on the Dunham Hill supply will be found later on.

CONGLETON RURAL DISTRICT.—“This district is well supplied with water. This year Holmes Chapel has been supplied with a good supply and is very much benefitted by it. Mow Cop and Mount Pleasant are not supplied; I think this should be done. Hassall Green is badly off on account of the intermittent supply.”

DISLEY RURAL DISTRICT.—“The supply is from Stockport (Lyme supply). Some 12 houses in Furness Vale are believed to be still without a proper supply.”

“MACCLESFIELD RURAL DISTRICT obtains water from a large number of sources, chiefly from springs and wells. Owing to the scattered nature of the population it is not easily possible to provide a public supply at a reasonable cost. Some progress, however, is being made in this direction, and 11 townships are now partly supplied from Waterworks which are stated to be of a more or less public character. A supply for Taxal is now on the way.”

MALPAS RURAL DISTRICT.—“This district is supplied largely from the Liverpool Corporation main. The main runs through the town of Malpas which it supplies, also the parish of Bickley. Other parishes are supplied from public and private wells. The supply is constant, and there are no complaints as to action on lead. There is a sufficient supply, and the wells are fairly free from the risk of pollution.”

NANTWICH RURAL DISTRICT.—Dr. Turner states:—“The scheme for the public supply of water to Faddiley, Brindley and Burland is now actually in progress. No advance can be recorded with regard to the supply so greatly needed for Audlem and its environs. I trust that the Council will push on with a scheme without further delay.”

The Surveyor reports:—“New water mains have been laid during 1911 in Batherton, Brindley, Burland and Faddiley; the mains in the three latter townships being still under construction. The length of mains laid in Batherton for the supply of eleven small holdings for the Cheshire County Council was 3,115 yards, which added to the total length laid up to the end of last year, namely, 288,343 yards, makes a total of 291,458 yards, or 165 miles and 1,058 yards of water mains now laid in this Rural District. The new mains in Brindley, Burland and Faddiley are not included in this total.

WATER SUPPLY.

“During the year forty-two houses have been connected to the mains, and the total number of houses supplied by the water mains in this district since 1879 is 3,662.

“In 1911 the quantity of water consumed in the district was 82,288,000 gallons, and in addition to this 1,460,000 gallons were supplied to Bickley for the Malpas Rural District Council. The consumption of water per house per day for the year was 61.6 gallons and the consumption per head of population per day 11.8.

“The Stapeley Waterworks have now been practically abandoned, as in order to get sufficient pressure for the extension to the small holdings at Batherton, it was found necessary to couple up the main in Broad Lane with that in the Woore Road, which is supplied from the L. & N. W. Railway Company’s main. The Stapeley Waterworks have been disconnected from the supply main to Broad Lane.

“During the year the sanction of the Local Government Board was obtained for the scheme for the Brindley, Burland and Faddiley water supply, and as above mentioned, this is now in progress. When the scheme is complete there will be over 12,000 yards of additional water mains laid. Suggestions have been made for the extension of these mains to supply Gradeley Green and the Blackhurst Farm, which it has been decided to carry out, subject to the owners giving the necessary guarantees.

“The water scheme for the supply of Audlem and district has advanced very little during the past twelve months, but there now seems some hope of better progress being made, as I think that the exceedingly dry summer of this year has convinced many residents in this district of the necessity of such a supply.

“Surveys and levels were made for a proposed water extension at Hamer Green, in the township of Stapeley, for the water supply of some cottages and farms. These were sent to the Local Government Board, who have sanctioned the scheme, and I hope that this work will shortly be carried out.

“During the year about 180 private water meters were fixed in the following townships:—Acton, Alpraham, Aston-juxta-Mondrum, Crewe, Church Minshull, Egerton, Baddiley, Bulkeley, Bunbury, Burland, Cholmondeley, Cholmondeston, Haslington, Haughton, Hough, Hurleston, Leighton, Minshull

Vernon, Shavington, Stapeley, Stoke, Wardle, Warmingham, Willaston, Wistaston, Wettenhall, Worleston, and Batherton. In addition to these about twenty meters have been fixed in other townships in the ordinary way. There has not been time to estimate the effect the meters will have on the consumption and on the finances of the townships concerned but so far as it is possible to judge the consumption of water has decreased considerably in those townships where meters have been fixed."

A special note is appended on the Audlem supply (see later).

NORTHWICH RURAL DISTRICT.—The Surveyor reports:—"The water supplies have been systematically dealt with during the year, and include public services of a constant character from 7 of the Council's own Waterworks; and from 4 neighbouring authorities, *i.e.*, the three towns enclosed within our boundaries, and the Liverpool Corporation, whose pipe line from Vyrnwy passes through this district.

"There have been no complaints of lead contamination. Fifty samples have been analysed either chemically or bacteriologically. The outlying farms and cottages are supplied by shallow wells (not always good), and there is constant endeavour to increase public services and furnish pure supplies whenever and wherever practicable."

"The water supplies throughout the district have been taxed very heavily during the past summer. In fact, a large amount of my time has been occupied in endeavouring to maintain a constant supply, especially in certain districts.

"Moulton, Davenham and Leftwich.—Moulton, Davenham and Leftwich supply was the first to feel the effects of drought, but with the branching together of the Middlewich mains and our own at Mere Heath, Davenham, with a meter fixed on the branch, we have now no need to fear a further dry summer. In addition to this work, a Candy Pressure Oxidising Filter has been fixed on the supply at the pumping station, owing to a report of the County Analyst that the water was only "second class." Samples of the water have since been sent to the Analyst before and after filtration, and his report states that the filtered water is "50% purer" than the unfiltered, and a good water fit for domestic use. The Council have decided that this filter needs protection from the weather and the work of erecting a house for the same is now in progress.

WATER SUPPLY.

"Weaverham and Acton.—The second supply to feel the drought was that of Weaverham (village) and Acton. The Council have considered the question and approved a scheme to be commenced in the spring, for a 2in. main to be laid from the mains of Crabtree Green water works and connected to the Tower Tank at Weaverham. This will ensure a certain and abundant supply at all times of drought. A scheme for duplicating the present pumping installation has been under consideration.

"Barnton.—The third supply I discovered was not equal to the excessive demand was Barnton, but here things were somewhat better, as the Little Leigh reservoir (which is not generally in use) will supply one portion of the district. It was a fairly simple matter therefore to arrange for this to be carried out by operating certain valves. Thus a constant supply was maintained.

"The pump house has been extended and a second set of pumps fixed at these works to ensure a ready means of maintaining the supply in case of breakdown.

"Owing to the Inspector's report that two out of the six sources of the supply were polluted, these have been cut out permanently, on the order of the Council.

"Lostock Gralam.—Lostock Gralam Waterworks, although heavily taxed, met the demand. However, the Council have decided to improve the supply if possible. Further collecting drains have been laid down at the works, and this has improved the supply somewhat, but not sufficient for future needs. The Council therefore decided to investigate for an additional supply at Lostock Green, where a stream of water was discovered during sand pit excavations. A sample of this water was forwarded to the County Analyst, and his report being satisfactory, further investigations were proceeded with. Work is now in hand for collecting this supply so that further tests as to quantity, &c., can be made. If satisfactory in all respects it is proposed to add this to existing supply.

"The reservoirs have been emptied and cleansed.

"Cuddington, Hartford, and Weaverham (Sandiway).—Crabtree Green Water Works being the supply for Cuddington, Hartford and Weaverham (Sandiway) stood the strain of the dry weather fairly well but owing to the 4-inch main from the springs to pump well being incapable of delivering the whole of the water yielded by the springs, the Council decided to lay, on an

improved gradient, a new 5-inch main. This main does all that was expected of it, the supply to the pumps being very satisfactory. This has placed these works as regards quantity of water available on a very satisfactory basis, enabling the Council to give a supply to Weaverham (village) as previously stated.

“Marston and Wincham.”—Marston and Wincham Water Works (gravitation) stood the dry weather strain exceptionally well. A large number of repairs to mains and services have been necessary in these districts through subsidence.

“The supplies in the other districts and those supplied by neighbouring authorities have been satisfactory.

“Water mains have been extended in Hartford (2 furlongs) and Oakmere and Cuddington (1 mile 3 furlongs), Gallowscough Lane. This makes a total length of mains in the district of 79 miles.

“A suggestion for the supply of water to certain portions of Whateroft, Byley, and Rudheath has been under consideration: and it is expected shortly to decide on some definite scheme

The Inspector of Nuisances, Mr. Bennett, adds the following:—

“Water Supplies.”—Of the 37 townships in the district 23 are supplied with water from the Council’s own mains supplemented by private mains in 2 townships. Extensions have been carried out in Oakmere giving a supply to 14 houses including 4 farms. Nineteen samples of water from these works have been submitted to the County Analyst for chemical analysis, 13 of which have also been submitted to the Public Health Laboratory in connection with the Victoria University for bacteriological analysis. The necessity for the bacteriological examination has been clearly demonstrated in the detection of pollution of the sources of supply, viz.: a sample taken from a domestic tap was submitted for chemical analysis and was certified good. A further sample was taken at the same time and place, and submitted for bacteriological examination, this was marked suspicious as bacilli coli type was found in 5 c.c. The Council at once ordered the six sources of supply to the works to be both chemically and bacteriologically examined, with the result that one was certified ‘bad’ chemically and two bacteriologically supported by the figures in the chemical analysis. These were at once ordered to be disconnected and abandoned.

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“The public supply at Moulton, marked second class requiring filtration, has been turned into a first-class water by the erection of a Candy polarite pressure filter at a cost of upwards of £400, and thus at the close of the year the whole of the supplies from the Council's mains are known to be ‘first class’ and above suspicion.

“Thirteen samples of water have been analysed from 11 private pump wells, and 5 samples from two public pump wells; of the 13 wells 7 were certified bad, 3 suspicious and 3 good; one well certified bad was found to be surface polluted and has been reconstructed and is now awaiting re-analysis. Five supplies certified bad with 2 certified suspicious are in the Byley, Whatcroft, and Rudheath district affecting 10 farms and 8 cottages, but owing to the difficulty in obtaining suitable water in the locality, the Council have appointed a Committee to consider the advisability of providing a public supply for this part of the district. The other supply certified bad was from a public well situate in the township of Little Leigh. This has been thoroughly cleansed by the Surveyor, and re-analysed bacteriologically, the certificate of which has been returned for more definite information. In the meantime the Council have taken steps to obtain information as to the provision of an amended supply, and the other marked suspicious has been abandoned and a supply obtained from the Council's mains.

“Certificates under Section 6 of the Public Health (Water) Act 1878, have been granted in respect to 34 new houses during the year, 2 of which are supplied from rain water tanks, 2 from pump wells after analysis, and the remaining 30 being supplied from the Council's mains.”

In the RUNCORN RURAL DISTRICT, states Dr. Adams, “there are 41 Townships, many of which abut upon, or are within the statutory limits of, a local authority other than your Council, thus:—

1. Halton and Weston are supplied by the Runcorn Urban District Council.
2. Acton Grange, Appleton, Daresbury, Grappenhall, Hatton, Latchford Without, Moore, Newton-by-Daresbury, Stockton Heath, Stretton, Thelwall, Walton Inferior and Walton Superior, are all supplied by the Warrington Corporation.

3. The Aston Estate, the Norton Estate, and the Townships of Aston, Dutton, Preston-o'-th'-Hill, Sutton and Norley, are all supplied by the District Council from the Liverpool Corporation Vyrnwy Mains.
4. Frodsham and Frodsham Lordship are supplied with an excellent supply, constant in character, from a deep well and borehole in red sandstone.
5. Helsby is supplied by a deep well and borehole in red sandstone.

"These latter two supplies are provided and distributed by the Council. Thus out of an estimated number of 6,420 houses in the area of your Council, no less than 4,950 houses are supplied with these first-class drinking waters. I have not the Census Returns in my possession, and these figures are only approximate.

"The remaining 15 Townships are supplied by private wells, public wells, running pipes from springs, springs and wells, or combinations of two or more of such supplies. These Townships are Alvanley, Antrobus, Aston Grange, Bartington, Clifton, Crowley, Keckwiek, Kingsley, Kingswood, Newton-by-Frodsham, Seven Oaks, Stockham, Whitley Inferior, and Whitley Superior.

"Your Rural District, situated as a rough triangle, with Runcorn, Chester and Warrington, as relative apices of the triangle, happens to be very fortunate in its opportunities of deriving extraneous aid from other districts, to supply its needs of water supply. Thus your district contains 41 Townships, 26 of which are supplied with a constant supply of drinking water, and the chemical analyses of all these public water supplies indicate that the sources of supply are as good as can be obtained, whether derived from outside areas or obtained within the area of your own district.

"The Liverpool Vyrnwy Water scheme supplies at present the Township of Sutton, and a portion of Aston, so much of Dutton as is available, including the Isolation Hospital, portions of Preston Brook, and practically the whole of Norley; also Halton and Weston and a portion of Norton.

"The Warrington Corporation Water Works has extended its mains into your District so far as to supply the whole of Stockton Heath; Walton Inferior, with the exception of a very few houses; Walton Superior, Moore, a large portion of Aeton

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Grange, the larger portion of Daresbury, and a portion of Newton-by-Daresbury, Latchford Without, Thelwall, and a portion of Grappenhall; the remaining portion of Grappenhall is supplied by a private water works, belonging to the principal owner and erected at his own expense.

“The Frodsham and Frodsham Lordship Water Works supplies Frodsham and Frodsham Lordship, the latter Township including the hamlets of Overton, Five Crosses, Bradley, Netherton, and Woodhouses.

“Your Council’s Water Supplies include the parishes of Helsby and Norley.

“The Runcorn Urban District Council afford an excellent water supply to the Townships of Weston, Halton, and adjoining Townships, through their adoption of the Liverpool Vyrnwy water scheme. Thus the most important and populous portions of your district are supplied with excellent public water, while the absolutely rural localities are called upon to depend on the individual local water supplies chiefly derived from the easual pump or well.

“Great Budworth has a private Water Supply to 69 houses.

“Manley has a private Water Supply to 56 houses, and there are 36 houses on the Grappenhall private Water Supply.”

TARVIN RURAL DISTRICT. — Dr. Burton reports:—“The northern portion of the district is supplied partially by pipe supply, and partially from public and private wells. The parishes of Ashton, Mouldsworth, Kelsall, Willington, Beeston, Tilston-Fearnall, Tiverton, Saighton, and Waverton, comprising about 406 houses, are supplied by pipe; the remaining parishes, with about 1,420, from wells.

“The southern portion of the Tarvin Rural District is supplied, as to the parishes or parts of the parishes of Aldford, Buerton, Churton-by-Aldford, by the Wrexham Water Works; the remaining parishes by springs and deep and shallow wells.

“The water supply during the hot and dry summer of 1911 was inadequate in many parts of the districts, viz.:—Newton, Broxton, Burwardsley, Tilston, Harthill, and Carden, but is quite sufficient and satisfactory during an ordinary summer. This is explained by the fact that these parishes are on or just fringe the

range of hills that form the eastern boundary of the district. The long period of drought affected these sandy hills, preventing their performing their natural functions of collectors of water.

“The water supply as far as I have been able to judge at present is otherwise sufficient, and with two exceptions in a polluted well at Shoeklach and another at Broxton, which have been closed, fairly free from the risks of pollution.

“No contamination of any of the water supplies by lead has occurred.”

A special note on the Kelsall and Farndon supplies is given later.

TINTWISTLE RURAL DISTRICT.—Dr. Awburn reports :—
“Tintwistle is supplied from its own reservoir, about one and a half miles from the village, which is both plentiful and good. Matley is supplied from springs which run into a reservoir situated at Gallows Clough. This supply is also good. Hattersley.—This district is composed chiefly of small farms, each having its own water supply from springs in close proximity to the house. No complaints have reached me with regard to any of the water from these springs.”

WIRRAL RURAL DISTRICT.—Dr. Yeoman reports as under :—
“Two townships, viz., Prenton and Noctorum, are supplied by the Wirral Waterworks Company, and 29 townships derive their supply from the West Cheshire Water Company. Moreton and Saughall Massie are supplied from the West Kirby Waterworks. Irby Mill Hill and Pensby (Newton) are without any public supply, obtaining what they require from surface wells, and stored rain water.

“Half-a-dozen cottages at Ness get their supply from a spring in a field 150 yards away. I investigated the conditions of this supply at the request of a resident. A sample submitted to the County Analyst for examination was reported as a very good water and fit for domestic use.

“The West Cheshire and Wirral Water Works Companies provide a constant supply. This is pumped from deep wells in the new red sandstone at Hooton and Prenton. This water is exceedingly hard. Some recent analysis give a total hardness of 19.0 on Clark’s scale, which is reduced to 1.75 when boiled. An

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analysis of the mineral constituents of the Hooton Well Water, on 13th February, 1911, gave the following result:—

Calcium Carbonate, 11.5 grains per gallon.
Magnesium Carbonate, 3.78 grains per gallon.
Magnesium Sulphate, 1.50 grains per gallon.
Sodium Sulphate, 2.20 grains per gallon.
Sodium Chloride, 3.62 grains per gallon.

Prenton Well Water:—

Calcium Carbonate, 8.90 grains per gallon.
Magnesium Carbonate, 1.94 grains per gallon.
Magnesium Chloride, 2.77 grains per gallon.
Sodium Chloride, 1.15 grains per gallon.
Sodium Sulphate, 2.43 grains per gallon.
Iron, Alumina, Silica, 1.40 grains per gallon.

“These analyses were made from samples of the water as delivered to the consumers. For many years the hardness of the water and its colour were the subject of complaint to your Council, and the Medical Officer of Health frequently referred to these complaints in his reports, so that this year when the companies were applying to Parliament for the sanction and confirmation of the construction of certain works, and for authorisation to raise additional capital, you found a suitable opportunity to bring pressure to bear upon them to modify the water supplied. Preliminary negotiations failed to obtain any real concession from the companies, so that in conjunction with other affected districts, you were put to very considerable expense in opposing the Water Companies, but the result of your opposition will be fully justified by the increased comfort which will accrue to your ratepayers from the softening of the water, which the West Cheshire Company will now have to undertake.”

There are certain parts of the County where the water-supply is in need of considerable betterment, and I am investigating these cases as rapidly as my numerous other duties will permit. The following are notes of cases where urgent action appears desirable. Dr. G. Jubb, Medical Inspector to the Education Committee, has been kind enough to offer his services in spare time for special investigations into matters of public health interest, and I have been very glad to avail myself of that offer. In the matter of the Kelsall, Farndon, and Dunham Hill water-supplies he has drawn up a special report after repeated visits, and I beg to reproduce his findings and to express my thanks for his thoroughness.

DUNHAM HILL WATER SUPPLY.—The Parish of Dunham Hill contains 60 houses (2 of which are at present unoccupied) and has a population of 280. The district is largely a dairying one, and there are about 400 cows in the parish, most of the milk going to the Helsby Creamery, but some to Manchester and Chester.

Thirty houses in the village, with a population of 131, are dependent upon their village well for their water, which they have to pump up and carry home as they require it. Four of these houses are farms, with 14, 16, 25, and 27 cows respectively, and at six of the other houses a few cows are kept.

The village well is 90 feet deep and 7 feet across, sunk through the sandstone, unlined, and has not been cleaned out for some years. The quality of the water is not very good. Last summer was a very dry one, and the water in the well got very low, and on two occasions, I have been informed, those desirous of getting water had to be at the well at 4 a.m., if they wished to get sufficient.

Eleven houses, with a population of 42, have no water supply, and have to borrow water from any neighbour who may have a well on his premises. One of these houses is a farm, and at six others there are cow-keepers.

The 17 other houses, 12 of them being farms and 2 public houses, are provided with wells. These wells vary in depth from 90 feet to 35 feet, depending on their position on the hill. Many of them are unlined, and have not been cleaned out within the recollection of the tenants. Owing to the depth, the pumping is very toilsome, and some of the wells fail in summer.

In most instances these wells are placed in dangerous positions, a favourite position being in a sort of hollow square formed by the farm house, stables, cowsheds, manure heap, and pigstyes.

In many instances the waste water is discharged near the well, and in two instances the waste water runs over the covering of the well. In some instances a cesspool is in dangerous proximity.

The drainage is usually in a bad condition, being mostly carried in rough surface channels.

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The cowsheds without exception gave abundant evidences in the condition of the floors and surface channels, that a more abundant use of water was required. Refrigerators are in use in many farms, both in summer and winter, though a few farms use them only in summer. All the users unanimously say that rain water is useless for the refrigerator, especially in summer.

All the houses were provided with the means of storing rain water, either in barrels or tank. Only on three occasions was a filter found.

A borehole was found below the station and about half a mile from and below the village. This borehole discharges a large quantity of apparently good water, and probably a sufficient amount could be obtained by storage to furnish a gravitation supply for the village and the surrounding houses and farms.

KELSALL WATER SUPPLY.—The inhabited houses in Kelsall number 169, and their present source of supply is as follows:—

Supply.		Number of Houses.	
Tarvin Parish Council	Gunnery's Well ...	37	
	Needham's Tank (supplied from above well)	10	Gravitation supply.
	Hallow's Gate Well	7	
	Ashton Lane Well	12	
	Mr. Dutton's Tanks	28	Gravitation supply.
	Mr. Parr's „	4	„ „
	Artesian Well on Hill (Cooper's & Wright's Farms)	2	
	Rookery Farm (Nicholl's) ...	1	

Gunnery's Well.—Shallow well, 7ft. deep; 5ft. 4in. water in well; concrete surface broken; refuse thrown down near well, 6ft. on upper ground, above well, and 25ft. away. There are pig-styes, manure heap, tank (cesspool), and privy. The drainage from the pig-styes escapes over the surface of ground.

Hallows Gate Well.—On roadside; 3ft. deep; 1½ft. water standing in it; lined with rough stones; not covered properly; filthy interior.

Ashton Lane Well.—Over 20ft. deep; unlined (dry bricks); puddled clay has been applied lately to prevent leakage of offensive matter into well; placed at entrance of small quarry hole; cesspool 30ft. away; privy 50ft. away, and on bank; surface drainage passes in direction of well.

Mr. Dutton has two collecting tanks in field; covered over and exact position not known; not ventilated and not cleaned.

FARNDON WATER SUPPLY.—Farndon is a village on the Dec, 12 miles above Chester by water, and 9 miles by road. The population is over 500. Across the river is the village of Holt, in Denbighshire, where the same conditions as to water supply exist.

The water supply of Farndon is by means of wells and springs and river water (Dee).

I. WELLS:—

(a) *Barton Lane Well*.—Supplies probably half-a-dozen houses or more in the upper part of village. Appears to be a shallow well. It is covered by tiles, which are open and require cementing. The well is beside a gate leading into a field, and cows pass close to well. At visit there were traces of cow dung on covering of well. The well is 25ft. from the nearest house, and behind it is a garden. The well never runs dry.

(b) *Post Office Well*.—The principal supply of the village. In front of the Post Office, and practically in the centre of the village. Covered by tiles. It is evidently a deep well and the pumping is very heavy. Post Office is about 10ft. from well, and there are gardens at side of well.

(c) *Private Wells*.—Many of the larger houses, such as farms and public houses, etc., have wells of their own.

The well at the Nag's Head was inspected, as the licensee is a milk seller also and keeps 6 cows. The well is 70ft. deep, and is covered by tiles. By means of the pump a tank in the yard is filled, and by means of a force pump the water from this tank is supplied to w.c. cistern, kitchen, etc. This tank is covered by a wooden lid, which was pierced by 2 small holes. The tank was very foul and the surface of the water was covered by an oily scum and had straws floating on it.

II. SPRINGS:—

(a) *Riverside Spring* on bank of river, below the bridge and beside footpath. Water was delivered by a 3in. agricultural pipe, and there was a fall of about an inch into a roughly fashioned basin. The spring was protected on three sides by wire fencing, which however was in bad repair. The river bank all around was covered by the hoof marks of cattle, which were watered at the river here, and a resident informed me that

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cattle also drank at this spring. The spring appeared to be a surface spring.

(b) *Two other small Surface Springs* were found in the same line as the large spring, a little lower down, but were probably not often used.

III. RIVER WATER:—

River Water from the Dee is largely used for washing purposes, as it is softer than the well water available. The licensee of the Nag's Head said that he always used it for laundry purposes. While inspecting one of the sewage out-fall pipes, a water cart came to the same spot, and was filled with contaminated water by 4 men with buckets. Inquiry elicited the fact that the water cart was from the Raven Hotel, and that the water was for washing purposes.

There are thus three public sources of water supply in Farndon, the principal one being the Post Office or "Town" Well. It supplies 55 houses containing 221 inhabitants, most of these houses being situated in the centre of the village. In many cases the water is carried 200 or 300 yards.

Barton Lane Well is situated at the upper end of the village and supplies 20 houses (75 occupants) some of the villagers carry water from this well for considerable distances, some 200 or 300 yards, 2 households carry $\frac{1}{4}$ mile, and other two households carry fully $\frac{3}{4}$ mile. These last two are Sibbersfield Cottages, outside the village and they usually employ a horse and cart and carry enough on each occasion to last both householders for 2 or 3 days.

During summer weather the water in this well is soon exhausted by pumping, and the people have frequently to wait till sufficient water collects in the well. To obviate waiting it is a common thing for there to be considerable competition to be first at the well in the morning, some even going at 4 a.m. in order to secure water.

The Riverside Spring supplies 11 houses (52 occupants), some of the houses being 100 or 150 yards from the spring.

Private Wells. There are 22 private wells but only 16 in use supplying water for 97 persons. Of the remaining 6 private wells, 3 are in total disuse through lack of repairs and 3 are in partial use for the supply of water for cleansing purposes only. In the small village of Crewe by Farndon, which consists

of a farm and 9 cottages, situated about a mile from Farndon, and in the parish of Farndon, there are three private wells supplying the 10 houses (31 inhabitants).

River Dee Water is largely used for various purposes by the inhabitants who live in the lower part of the village. Considerable quantities are used by the larger inns for laundry and washing purposes. In the baker's shop it is used in baking, although it is stated that it is always boiled in a large tank and cooled down before use. Two small houses on the river's bank supply refreshments to visitors, and invariably use the river water for making tea, &c. Many others use the river water for making tea, as it has a great local reputation for this purpose. There must always be the risk that river water may at times be supplied to visitors, for consumption in its raw state, or that unboiled water may be added to boiled water, or used without previous boiling, in the preparation of food or the cleansing of dishes, &c.

Farndon—

Water Supply.	Number of Houses.		Occupants.
Barton Lane Well	20	75
Post Office „	55	221
Riverside Spring	11	52
Private Wells (16)	22	97
„ „ (6) not used	—	...	—
		<hr/> 108	<hr/> 445

Crewe-by-Farndon—

Private Wells (3)	10	31
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WATER SUPPLY.

The following is a brief note of the existing private wells:—

Situation.	Occupants.	Remarks.
Rose Villa Farm (Jones)	... 3 ...	
Meadow View Farm (Lowe)	... 5 ...	
Masons' Arms Inn	... 3 ...	
Police Station	... — ...	Use Post Office Well
Pugh and Lewis (2 houses)	... 10 ...	
Lowe's Farm (opposite Post Office)	— ...	Use Post Office Well for drinking water
Parker, Butcher	... 6 ...	
Jones and Morgan (2 houses)	... 10 ...	
Raven Hotel	... 11 ...	Supplies next door house (7 occupants)
Bellis	... — ...	Disused. Use P. O. Well
Greyhound Inn	... — ...	Disused. Use Riverside Spring
Oak House (Grange)	.. 2 ...	Use next well for drink- ing water but supply small house adjoining
Bellmont House (Harding)	... 8 ...	See above
Brewery	... 5 ...	
Hughes	... 5 ...	
Nag's Head Inn	... 5 ...	Supply house next door
Vicarage	... 5 ...	
Dr. Parker	... 4 ..	
Farndon Hall	... 7 ...	
Edge and Parker (2 houses)	... 6 ...	
Bank House (Gill)	... 2 ...	
Carr and Lucas (2 houses)	... — ...	Disused. Use P.O. Well
22 Wells.	— —	
	97	

These matters are receiving the attention of the Chester and Tarvin Rural District Councils, and possible schemes for a public supply are being at present investigated,

AUDLEM WATER SUPPLY.—The water supply of this district is seriously in need of consideration by the Nantwich Rural District Council. The Medical Officer of Health has condemned the present system (or want of system) in no uncertain manner. The Council's Engineer, Mr. C. E. Davenport, A.M.I.C.E., presented

a full report on the subject in October, 1909, from which the following is extracted :—

“The district in question consists of some eleven townships and is situate on the south side of the Rural District. The greater part of it is a considerable distance from any existing public water supply, and the first question to be decided is which will be the best and most economical method of obtaining water for the supply of same. There are two methods of doing this, firstly, by the construction of independent water works, and secondly, by connecting up with the existing water mains on the west side of the district. The construction of independent works would involve a large capital expenditure, and, having regard to the geological formation of the district, would almost of necessity have to be fixed a considerable distance outside the Council's district; so that besides the cost of the works themselves there would, in addition, be the cost of a long supply main to Audlem and district, from which no revenue would be obtained. In connecting up with the existing water mains on the west side of the district, the cost would be merely that of cast iron mains, the whole of which would be within the district and would be available for the supply of the houses on the route of same. Nearly the whole of these mains would have to be laid, even if independent works were constructed, so that the cost of mains in both cases would practically be the same. The question to be considered therefore, is—Would it be cheaper to buy water or to construct works?”

“I estimate the probable cost of water for ordinary consumption for the district in question if purchased at sixpence per 1,000 gallons (this has already been agreed upon with the Liverpool Corporation) would be about £230 per annum. Under favourable conditions I do not think independent works, including borehole, pump, engines, machinery, service reservoir and supply main to Audlem, could be constructed for less than £8,000, and might cost considerably more, but taking this figure as a basis, the annual cost for repayment and interest of this sum would be at least £500, in addition to which there would be cost of labour and pumping, which would be at least £150 per annum, making a total annual expenditure of £650, as against £230 for water only. But while the construction of independent works would thus be too burdensome for Audlem and district alone, I think that having regard to the total amount now paid by the Council for water, a scheme for independent works for the whole of the district would be worthy of consideration. It being obvious that the most economical method of supplying the Audlem district is from existing water mains, and as the nearest main of sufficient capacity for

WATER SUPPLY.

this purpose is the 5-in. main in Cholmondeley, I propose that a 6-in. trunk main should be connected up to this main and carried from it to the centre of Audlem, supplying en route the following townships:—Wrenbury, Woodcote, Sound, Broomhall, Newhall, Dodecote, Coole Pilate, Audlem, Hankelow, Hatherton, and Buerton. The route taken by the trunk main would be down the road to Nantwich, through Cholmondeley, past Cholmondeley Schools to bridge over River Weaver, where, in order to shorten the distance and avoid the hill beyond, it would turn to the right and follow the river till it reached the road to Wrenbury Frith. It would then pass through Wrenbury Village, and past the Church to the Railway Station, thence through Aston, past Sheppenhall Hall, and down Back Coole Lane to the Brickwall Farm, then past Brown's Bank and Audlem Railway Station to the Market Square in Audlem, where it would divide into two 4-in. branches, one going in the direction of Nantwich, through Hankelow to the boundary of Hatherton, and the other in the direction of Buerton and Kinsey Heath. The 4-in. main on the Buerton Road would terminate near Maybank; from here a 3-in. main would be continued through Chapel End and Buerton to a point a short distance past the end of the road to Hankin Heys. A 4-in. branch would also be taken to the top of Paddock Lane, and from here a 3-in. main would be laid to supply Kinsey Heath, terminating near Kynsall Lodge on one road, and just beyond Kinsey Heath Farm on the other. Another 3-in. branch would be taken down Green Lane and supply Swanbach and Coxbank. A 3-in. branch would also be taken past the Old Police Station and along Hen Lane to Little Heath, connecting up to the main to Hankelow. The other 4-in. main would pass through Hankelow, along the main road to Nantwich, with a branch across Hankelow Green to Hankelow Villa, and Hankelow Hall Gate. From the boundary of Hankelow the main would be a 3-in. and would be taken past the Broomlands, Hatherton Hall, to Hatherton Heath, terminating just beyond the Post Office. A branch would be taken off the trunk main at the Brickwall Farm and would go down Coole Lane to supply Coole Pilate, terminating just beyond the Chapel. A 3-in. branch would also be taken from the end of Coole Lane along the Whitchurch Road to supply Lightwood Green. A 4-in. branch from the trunk main would be taken over Salesbrook Bridge in the direction of Moor Hall, with 3-in. branches to Newhall Village, and also to Park View, from which 2-in. branches would be taken to outlying farms en route, and to Combermere Abbey. A 3-in. branch would be laid to supply Dodd's Green and Burleydam, and continued on to the Rookery Farm and Royal's Green; another 3-in. branch would go the Blakhurst Farm on the Ightfield road, with 2-in. branches to Withy Moor and Dodcott Farms. From Aston

Village a 4 in. main would be laid in the direction of Nantwich, terminating just past the end of Granford Lane. A branch would also be taken along the Whitchurch Road from the turn near Wrenbury Station to supply Smeaton Wood and Yew Tree Farm. From Wrenbury Schools a 3-in. branch would be taken to Sound Heath, supplying en route Wrenbury Heath, Woodcott, and a small portion of Newhall. From Sound Heath one branch would be taken up Sound Lane, terminating just beyond the Whitegate House, and another across the Heath to supply Newtown, and then across the Nantwich Road into Broomhall, past the Coronerage to Heatley and Top of the Town Farms."

"The above is shortly the whole of the mains included in the present scheme, but of course further extensions to outlying houses and groups of houses could be made as occasion required.

"The total number of houses in the eleven townships included in the scheme is 1,075, of which about 740 would be on the proposed line of mains. A considerable number of the other houses are also within easy reach.

"In calculating the quantity of water required to supply this district, it will be safer to take the total number of houses in the various townships as the number to be supplied, as although it is not likely that the whole of these would be supplied, it would allow a margin for future increase. Allowing 70 gallons per house per day as a maximum, which is fairly liberal, the main should be capable of supplying about 75,000 gallons, though the actual quantity at present required would probably not exceed 50,000 gallons per day. The greater portion of this would be required in about twelve hours. The present 5-in. main will deliver at its termination in Cholmondeley 160 gallons per minute, and a 6-in. main from this point to Audlem would be capable of delivering 130 gallons per minute at Audlem, or 93,600 gallons in twelve hours, as against an estimated quantity required of 75,000 gallons, so that it will be seen there would be ample margin. The fall between the end of the present main and Audlem is 100 feet, and the head on the present main at Cholmondeley is about 90 feet, the total dead head at Audlem thus being about 190 feet. The distance from Cholmondeley to Audlem is about eleven miles, and I estimate the cost of a 6-in. main for this distance at £7,150, for which the annual repayment, with interest, would be about £429. A 5-in. main would cost about 20% less, but would only deliver 57,000 gallons in twelve hours. There are two ways of apportioning the annual cost of the trunk main among the townships supplied, viz.:—first, on the basis of the number of houses in

each township, and second, on the rateable value of each, but the results do not vary very greatly except in the cases of two or three townships, with either a high rateable value and few houses or a low rateable value and a large number of houses, such as for instance Dodcott and Audlem. I think on the whole it would be the fairest way to apportion this cost on the number of houses, and I have taken this basis in arriving at the cost of the trunk main to each township, but have also stated the cost if calculated on rateable value. The total rateable value of these eleven townships is about £31,000."

A detailed estimate of cost, income and deficiency to be met from the Council's funds follows this report. It is to be hoped that the Council will not allow this urgent matter to be delayed any longer.

Bacteriological Examination of Water Supplies.

During the early part of the year I reported upon this matter to your Committee, and was duly empowered to arrange for the bacteriological examination of such waters as appeared to me to be of doubtful quality having regard to the results of chemical analysis or to the surroundings of the supply on the following conditions, which have been circulated to all the Councils and the officials concerned.

- (1) The cost of this bacteriological analysis will be borne by the County Council.
- (2) All requests for bacteriological examination under this scheme should come through the County Medical Officer of Health, who should be informed of the special circumstances necessitating such examination.
- (3) Prof. Delépine will, on the receipt of a request from the County Medical Officer, furnish the necessary outfit and will pay carriage on this on the outward journey; the person sending the specimen to Prof. Delépine must prepay the carriage on the inward journey.
- (4) The samples must be collected strictly according to the directions issued by Prof. Delépine.
- (5) The particulars required by Prof. Delépine must be fully entered on the label accompanying the outfit.

- (6) Prof. Delépine is desirous, for the purpose of preparing comparative records, of having a sample of water sent to him for chemical analysis at the same time as the sample for bacteriological examination is sent. If you are willing to take and forward this additional sample to oblige Prof. Delépine, please say so when writing for bacteriological outfit. No fee will be payable for this chemical analysis, unless the Council specially desire to have a report on it from Prof. Delépine: in the event of their desiring a chemical as well as a bacteriological report from Prof. Delépine, a fee of £1 1s. will be payable by the Council.
- (7) Prof. Delépine will report direct to the County Medical Officer of Health, and the latter will furnish a *verbatim* copy of such report to the Medical Officer of Health for the District.
- (8) Where bacteriological examination is requested on account of the surroundings of the supply being of a suspicious character, a full note (with sketch or small plan if possible) of the surroundings should be furnished to the County Medical Officer of Health at the time the request for examination is made.
- (9) Applications for examination should be in writing: when made by telephone there is always a risk of inaccuracy.

Prof. Delépine very kindly promised to arrange a demonstration of the method of taking samples of water for bacteriological examination at the Public Health Laboratory, Manchester, on separate dates for Medical Officers of Health and Sanitary Inspectors.

Section VII.—Sewerage and Sewage Disposal.

These important matters continue to receive the attention of the various District Councils. I have attended a considerable number of Local Government Board Inquiries in connection with new schemes during the year, and I have reported the circumstances in full to your Committee as they occurred.

The following extracts from the Annual Reports of the Medical Officers of Health, supplemented in a number of instances by reports of the Surveyors or Inspectors will shew your Committee that a considerable amount of good work is being done in this connection.

CREWE MUNICIPAL BOROUGH. The Medical Officer reports :—

“ New sewers were laid in the following streets :

Street on West Side of Bedford Street.

„ between 102 and 104, Bedford Street.

Continuation of Ernest Street.

Five sewer ventilating shafts were erected during 1911.”

The alterations and extensions at the disposal works are proceeding as rapidly as possible. I have only one suggestion to make in this matter, and that is, that when the new works are completed, the Council will place them under the supervision of someone possessing experience in the management of a modern sewage disposal plant and of course responsible to the Borough Surveyor. If this course be not adopted it is quite certain that the best results will not be attained.

ALDERLEY EDGE URBAN DISTRICT.—“ The sewer has now been laid to the extended area towards Nether Alderley. Only minor improvements have been made at the sewage works. One or two isolated cottages are not attached to the sewers.

“ Sewage is disposed of by detritus tanks and sedimentary beds, sand and cinder filtration and land filtration. No complaints have been made as to the disposal works.”

ALSAGER URBAN DISTRICT.—“ The system of disposal is the same as last year. The land soon gets sodden after heavy rain,

and is incapable of dealing satisfactorily with the sewage. The farm is well looked after and every possible opportunity is taken to obtain the best result from it. It is not cultivated.

“A scheme for improved sewage disposal is being pushed forward by the Council. Plans have been submitted and a Local Government Board Inquiry held.”

HIGHER BEBINGTON URBAN DISTRICT.—“The district is sewered throughout, except a few outlying residences. The sewers are flushed periodically. The outfall is into the river Mersey through the sewers of the Lower Bebington District, by arrangement with the Council of that area.”

LOWER BEBINGTON URBAN DISTRICT.—“There is a proper system of sewers throughout the district. In addition to the sewage of your district they receive that of Higher Bebington, Poulton and part of Birkenhead as well. There is no system of purification but the crude sewage is retained in a tank with a Penstock valve, and is then discharged into the tidal waters of the Mersey. A local enquiry was held by an Inspector of the Local Government Board with reference (amongst other matters) to a proposal to borrow money for the laying of a new sewer in connection with the building of some new houses.

“The following sewers have been laid during 1911 :—

“1,123 yards of new main.

“117 yards of tributary sewer.

“100 yards of defective passage sewer were relaid.”

BROMBOROUGH URBAN DISTRICT.—“The district is well supplied with sewers. The sewage is treated in septic tanks and contact beds. Adams' automatic syphons are in use. The effluent is discharged into tidal water. From Bromborough Pool village and works the sewage is discharged into the Mersey at low water mark. From the Mersey Chemical Works and from the 15 cottages connected with the powder magazines the sewage is passed directly into the river. Some of the large residences in your district have provided their own installations to deal with their sewage and pass the discharge through filter beds. The houses in Dibbinsdale have a septic tank and contact beds and the effluent passes finally into the Dibbin brook. A scheme for the more efficient treatment of the sewage from this area is at present under discussion.”

SEWERAGE AND SEWAGE DISPOSAL.

COMPSTALL URBAN DISTRICT.—“The sewage consists of slop water only, and is carried by the sewers into a reserve, which stores river water for the turbines at the mills. Eventually it is discharged into the river. The drains are trapped and ventilated. I understand your Council are considering the question of a new Sewerage Scheme for the Urban portion of the district. The river is polluted higher up the stream, and in summer causes an effluvia which is a nuisance. This, however, has been scarcely noticeable this year and there have been no complaints.”

The District Council should be urged to take steps to prevent this nuisance.

HANDFORTH URBAN DISTRICT.—“A new sewage scheme is now being considered, the last one being vetoed by the Local Government Board.”

HOOLE URBAN DISTRICT.—“The sewers of the district empty into the Chester system. They have been regularly flushed, and have been kept in good order.

“Acting upon the instructions of the Council, the Consulting Surveyor took the levels of all the sewers to ascertain the various gradients, and finding these in several places to be of insufficient fall, he prepared plans and sections for relaying the following:—

1. Charles Street to Walker Street.
2. Top end of Faulkner Street.
3. Top end of Hamilton Street beyond Charles Street.
4. Panton Place.
5. Six new manholes to existing sewer on Hoole Road past Hamilton Street.
6. Two new manhole covers in field leading from the Workhouse.
7. The old sewer from Faulkner Street to Lightfoot Street to be traced and defined with additional manholes.
8. To relay the sewer from Lightfoot Street to the Workhouse to improved gradients.

“The cost of the whole of the above mentioned improvements has been estimated to be £1,750, and plans have been sent to the

Local Government Board for approval." An inquiry has recently been held by the Local Government Board into an application for sanction to the necessary loan.

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"In some outlying portions of the district there are a few houses which are not sewered, but the district generally is well supplied with sewers which are kept efficiently flushed. A special staff of men is regularly employed for this duty. Your Council also undertakes the flushing of house drains at a very small charge to the tenants, and an extensive use of this arrangement is made."

KNUTSFORD URBAN DISTRICT.—"The District is well drained and sewered, except a few houses on "the moor" below sewer level. The main outfall sewer along the east side of the moor is probably insufficient. The treatment at the outfall is the subject of no complaint, and is as good as can be obtained under the local and unalterable limitations of area and depths available."

NESTON AND PARKGATE URBAN DISTRICT.—"Within the last few years your Council, recognising the needs of the growing Urban District, had the old sewers relaid and new ones constructed so that for a developing place the area is exceptionally well sewered. Nevertheless it is only with the greatest difficulty that property owners can be induced to desert the old fashioned and obnoxious method of midden privies. With the available sewers and the plentiful supply of water in this district it is only reasonable that owners should be made to avail themselves of the water carriage system on which you have spent so much public money. It is hardly credible, but otherwise well informed old residents in Neston have been heard to assert that there was no infectious disease in Neston until the sewers were introduced. If it be necessary to controvert such an assertion, I would direct attention to a paper in my possession written by a medical practitioner in Neston and neighbourhood, who was known to almost everyone of you, in which he states, "Towards the close of 1869 an epidemic of most fatal scarlet fever and diphtheria swept over a large portion of the district. Twenty-five severe cases of typhoid occurred in the early part of 1870 and small-pox also made its appearance in the June of that year; and I noted my one hundred and second case in April 1871. Immediately after this a malignant outbreak of scarlet fever and diphtheria again took place, and the mortality from these two epidemics was unusually large." Such was the state of Neston 40 years ago, prior to the introduction of sewers, and although there is a vast improvement, much work has still

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to be accomplished before we can claim to have reached the modern standard of sanitation.

“Parkgate sewage is discharged into tidal water, and the sewer is flushed periodically by means of a private swimming bath which discharges 18,000 gallons of water, obtained from an artesian well, along a six inch pipe into the sewer. The outfall of this sewer which at one time had become buried to a depth of 5 feet below the sand of the estuary bed is now quite clear. It was also 230 yards from the deep water channel, but this has worked its way in towards the shore until at the present time the sewer discharges into deep tidal water. For over two years there has been no complaint of any kind in connection with the Parkgate Sewerage.”

RUNCORN URBAN DISTRICT SEWERAGE.—“All the sewers discharge into one large intercepting sewer that runs parallel with the Manchester Ship Canal, and passes under the Canal west of the town, and opens out and discharges into the River Mersey. Further west there is another large sewer that drains some of the outside parts of the town; it dips also under the Canal some distance to the west of the town, and discharges into the River Mersey. These sewers are more or less continuously overlooked, and receive every needed attention.”

SALE URBAN DISTRICT.—“The Sewage Works were inspected several times during the year, and were found to be in good order. The new filter beds were found to be working most satisfactorily. The effluent taken at the time was practically odourless and quite clear in appearance; and the analyses made at quarterly intervals were found to be satisfactory, proving that the purification by chemical precipitation and subsequent filtration had been very effectual.”

SANDBACH URBAN DISTRICT.—“The new system is in very good working order and the effluent is a very good one. The system is as follows. All the sewers of the town have been connected up with the new sewerage system. One part has a small system of its own, and another that lies very low has been provided with a small pumping station of its own where the sewage is lifted by a water motor into one of the higher sewers. Storm overflows have been placed at various points. The Outfall Works are designed to deal with the sewage from 4,600 persons at 20 gallons per head or 92,000 gallons per day dry weather flow. The works consist of grit tanks, septic tanks, continuous filter beds, storm

beds and 3 acres of land for final treatment. The sewage is delivered at the works in two sewers which join in an open channel and pass by an open trough 12 feet long arranged so as to overflow when 6 times the dry weather flow is passing. From here flowing through 2 open channels with weirs 20 feet long, arranged to divide the sewage again, passing 3 times the dry weather flow to the tanks and the same amount to the storm water bed. There are two grit tanks, each 10 feet square by 6 feet deep, with a capacity of 7,500 gallons and 2 septic tanks each 41 feet by 20 feet by 9 feet deep with a capacity of 92,250 gallons. The grit tanks are fitted with chain pumps to remove the sludge which is pumped to a small lagoon on low ground. There are 2 filters, 70 feet diameter, 6 feet deep, with a total contents of 1,710 cubic yards, upon which the sewage is distributed by Fiddian Distributors, and from here the filtrate is distributed to the 3 acres of land by an open carrier. The filters are filled with tap clinkers, broken up to varying gauge, from 2 inches at the bottom to $\frac{1}{2}$ inch at top. The land has been drained to an average depth of 4 feet. The storm water bed consists of 670 cubic yards of broken clinkers, the water being distributed by half pipe channels. A few houses in the outlying districts are supplied with cesspools of a suitable character and are emptied and cleaned out as required. The main sewer has been extended from Park Lane to the new Council Schools in Whcelock Road to provide efficient drainage for these schools."

TARPORLEY URBAN DISTRICT.—"There have been no new works of sewerage carried out during 1911 and some parts of the villages are still without a proper system of sewers. Nearly all the cottages in Tarporley have been provided with w.c.'s and the remainder will be taken in hand shortly. The sewage is disposed of by means of a precipitation tank, sludge beds and land treatment. These sewage works are in good condition and the farm, after paying all working expenses, will show a profit. There have been no complaints as to the Disposal Works and no alterations have taken place at the Disposal Works during 1911."

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—"In December, 1908, it was decided to form a Joint Sewerage Board, comprising the Yeardsley-cum-Whaley Urban District Council, Chapel-en-le-Frith Rural Council, Disley Rural Council and Macclesfield Rural Council. In June, 1909, this was sanctioned by the Local Government Board. This Board has been at work since that date and I have every reason to believe that the work will be commenced at an early date."

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A number of Local Government Board Inquiries have been held on this matter and your Committee has been furnished with full reports of them all.

BUCKLOW RURAL DISTRICT.--“The various out-fall works are as described in my last Report, except that Northenden has been declared inefficient by the Mersey and Irwell Joint Committee and additional works are demanded. The Council has decided to lay out additional land for irrigation, to bring the total to 10 acres; but there is no doubt that settling tanks will also have to be provided, of suitable capacity, and some means of dealing with storm water. A Special Committee has been appointed by the Council to deal with all matters of this nature, in place of the several small local Committees which previously dealt with individual cases; and I hope that good results will follow. Northenden, Timperley, Baguley, and Peover are already receiving consideration.”

CHESTER RURAL DISTRICT.—“There are two new works of sewerage carried out during 1911 :—

1. The Eaton Estate have provided a filter bed at Balderton. This treats a good portion of the Dodleston sewerage as well as Balderton.
2. A similar filter bed has been provided for Poulton.

“Great Saughall, and I should say Mickle Trafford, are both in want of a proper system of sewerage. Great Saughall you have already before you for consideration.

“The City of Chester sewers dispose of the sewage from Christleton, Great Boughton, Newton, Upton, and the Bache.

“Eccleston, Pulford, Poulton, and part of Dodleston, are treated by the Eaton Estate. There have been no complaints during 1911 as to the disposal works in your district, but you complained about the Helsby sewage works polluting the Hapsford brook. There have been no alterations nor extensions in the disposal works during 1911.”

CONGLETON RURAL DISTRICT.—“The Council are to be congratulated on the scheme they have carried through regarding the sewage at Malkin's Bank. The scheme is working well and is very satisfactory.

“Thurlwood wants a scheme of sewage badly.

“Elworth is drained well but has no Outfall Works as yet though the Council are endeavouring to provide a scheme.

“I have had no complaints from the Holmes Chapel Sewage grounds this year.

“The drainage at Mow Bank is unsatisfactory and wants altering.

“I have inspected the Irrigation Grounds at Mow Cop and Mount Pleasant and found them working very satisfactory.”

MALPAS RURAL DISTRICT.—“No new works of sewerage have been carried out during 1911. The sewage for Malpas is disposed of by Dibdin's system, which is a bacteriological treatment of sewage. There are three outfalls on to three lots of filter beds, arranged in two tiers. No alterations or extensions have taken place in the disposal works during 1911.”

NANTWICH RURAL DISTRICT.—“No actual improvement of the drainage of the large villages has yet taken place. A scheme for the drainage of Willaston and part of Wistaston has, after some modification, received the approval of the Local Government Board. I trust that this work will be carried out without delay.

“The township of Haslington is in a very bad condition, but no real progress appears to have been made in providing for its drainage. This township and the adjoining one of Crewe Green are full of nuisances which cannot be remedied in any other way than by a sewage scheme. Nothing should be allowed to delay this necessary work.

“Broad Lane, Stapeley, is still without a system of drainage. A scheme for its drainage into the sewers of the Nantwich Urban District has been prepared and submitted to the Local Government Board. The Board approved of the scheme from an engineering point of view, but deferred its sanction until the Nantwich Urban District Council has made provision for outfall works, an attitude with which I cannot agree, as I think the danger to the health of the residents of Broad Lane is of vastly more importance than the slight additional pollution of the river Weaver by the small volume of sewage from these few extra houses.

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“The township of Shavington is in need of attention as soon as the more urgent cases of Haslington, Willaston, and Broad Lane are arranged for.

“No scheme has yet been brought to a head for London Road and Crewe Road, Willaston, where the conditions as to drainage are simply disgraceful.”

The Surveyor adds:—“During the year the Local Government Board have held an inquiry into the scheme submitted to them for sewerage Willaston and Wistaston, and they have expressed approval of the same, subject to some alterations in the disposal works. These have been made and the plans have been re-submitted to the Board, and as soon as their sanction is obtained the scheme can be proceeded with.

“Prolonged negotiations have taken place for the acquisition of a site for the Haslington sewerage works. These are now nearly complete, and the levels and surveys have been taken for the extended scheme to Winterley, and the preparation of the plans is in hand.

“An enquiry was held by the Local Government Board into the scheme for the sewerage of Broad Lane, to which there was no opposition, except from the County Council on the ground that the sewage would be discharged through the Nantwich sewers into the river Weaver. The Local Government Board have sanctioned the scheme, subject to disposal works being carried out by the Nantwich Urban District Council for the treatment of their sewage. This work cannot therefore be commenced until the Nantwich Urban District Council take steps to construct sewage purification works.

“The sewerage of Crewe Road and London Road will have to wait for similar reasons before it can be dealt with.”

The Inspector adds:—“On the 10th of October I met by appointment Dr. Young, the County Medical Officer of Health, at Ridley, for the purpose of making an inspection of the Ridley and Spurstow brooks. We began our inspection at Ridley Bank Farm and traced the various sources of pollution as far as Haughton Hall. We inspected the filter beds which were constructed on land in the occupation of Messrs. Ankers and Broughton for the purpose of purifying the sewage produced on their farms, with a view to preventing the pollution of the Ridley brook. The effluent from

the filters at the time of our inspection was very unsatisfactory, little or no purification of the sewage was taking place. The filtering material was top layer granite chippings—bottom layer graded stones. We called the attention of Messrs. Ankers and Broughton, whom we met on the spot, to the effluent, and suggested that the filtering material should be changed. We advised them to remove the granite chippings, etc., and to fill the beds with hard burnt vitrified clinker. This material is practically equal to stone or granite in its ability to withstand the various influences which tend to cause disintegration, and it possesses the advantage over stone and gravel of having numerous cavities which apparently form the most suitable means of assisting the development of the bacterial gelatinous growth which appears to be the essential factor in causing the deposition of the organic matters in suspension and in solution in the tank effluent. It would seem as if smooth surfaces of the stone cannot retain this growth and that it is washed away as soon as it begins to form. A large septic tank has been built on the drainage system at Ridley Hill Farm to intercept the solids; the overflow discharges into a ditch which empties into the Ridley brook. I pointed out to the Estate Agent that the sewage from the cesspool would be more offensive than fresh sewage, and its discharge into a ditch would accentuate the nuisance as the effluent would be in a putrefactive condition, the odour being intensified. Lower Hall Gate.—The sewage from this farm is discharged into a small detritus tank, which intercepts the solids and allows the liquid after rising to a certain height to pass through an inlet pipe on to a spreader on the surface of the filter bed. The filtering medium was coke. The effluent from the filters discharges into the Spurstow brook, and was fairly satisfactory. With a view to obtaining a better effluent we suggested the building of a septic tank and the filtering medium to be hard burnt clinker. At Mr. Jones' farm near the Spurstow Schools the sewage from the cowsheds, etc., is conveyed into a cesspool provided with an overflow which discharges into the brook. A filter bed and septic tank should be constructed at this farm. The filtering material in the bed at Haughton Hall was broken bricks, etc. We suggested that it should be hard burnt clinker."

NORTHWICH RURAL DISTRICT.—The Medical Officer reports:—"Sewage and sewage disposal, which, briefly, includes the relaying of a 9 inch sewer at Chapel Place, Weaverham, a new 12 inch sewer at Hartford, and a new 6 inch sewer at Plumb's Fold, Barnton, to replace an old one.

"Lostock Green is a district which needs a more efficient system of sewerage, and the matter is under consideration.

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"The systems of disposal include :—2 septic tanks with sand filtration, 4 septic tanks with percolating filters, 1 precipitation by alumino-ferric and land, 1 septic tank and lateral filter (clinkers), the remainder being septic tanks.

"Complaints have been made by the County Medical Officer of Health about Lostock and Barnton Works.

"Alterations and extensions are in progress at Barnton and Rudheath ; and have been done at Moulton."

Hartford.—The Surveyor reports as follows :—"The new 12in. main sewer at Hartford, engineered and partly laid by Mr. Bennett, has been completed and is working satisfactorily. This scheme has been a great step forward in the improvement of the system of sewerage in the locality of Hartford station, and its value has already been instanced by the encouragement of the building trade in this district, where an important local firm have commenced to build nine large dwelling-houses. This 12in. sewer is now being extended by a 9in. sewer 200 yards in length for this additional property. Also, a scheme is in hand for the more efficient sewerage of the south-west side of the London and North Western Railway, by a new 9in. sewer to be laid across the Railway and connected up to the new 12in. sewer previously referred to. This scheme will effectually do away with two small outfall works and deliver the sewage to the main outfall works at the River Weaver.

"*Weaverham.*—The Weaverham Village outfall works have been removed further from the village and remodelled and re-erected on a better site by my predecessor.

"A new 9in. sewer has been laid in Chapel Place to replace an old and faulty one.

"*Barnton.*—The sewerage system at Barnton has been improved at Plumb's Fold, where a new 6in. sewer has been laid down. This has done away with an old and faulty drainage system, and has provided for the more effectual drainage of some of the property in this locality.

"The Council's order has been given for a Webb Lamp Ventilator to be fixed on the sewers at Canal side.

"The Gunnersclough outfall works improvements and additions contract has been in operation for the last three months and will

shortly be completed. The works consist of additional septic tank accommodation, new percolating filter with revolving distributor, storm water tank, sludge bed and effluent drains, &c. This work will, I am of the opinion, effectually stop the receipt of complaints from the County Medical Officer of Health.

“At Barnton outfall works, the contract is set, and work in the contractor's hands for the efficient ventilation of the pump well, the screening of the low level sewage and construction of detritus chamber. When this is completed the dangers from sewer gas at this well will be avoided, and the pumps will work more satisfactorily.

“*Lostock Gralam.*—The Council have had under consideration the Lostock Gralam outfall works and are hoping to carry out improvements shortly. I am now engaged on drawings, &c., but as no scheme is, as yet, decided upon, it is inadvisable to say what the improvements will be.

“At Lostock Green a sewerage scheme with outfall works is suggested, and I am engaged on the preparation of drawings, &c., for same.

“*Rudheath.*—The Rudheath outfall at Shurlaeh is being improved by the addition of a septic tank and filter, and the existing 9in. effluent sewer is being replaced by a new one 12in. diameter. This work is in progress.

“*Moulton.*—In connection with the outfall works at Moulton, where the sewage is treated on one acre of land, the Council decided to have the surface of land levelled, and revived by a good dressing of lime. Also, that aluminiferous (which was formerly used on these works) be once again resorted to. Since this work has been carried out the County Analyst reports on the effluent as a ‘very good’ one.”

TARVIN RURAL DISTRICT.—Dr. Burton reports:—“There have been no new works of sewerage carried out in your district during 1911. Farndon and Tattenhall are still without a proper system of sewerage. The sewage is disposed of, in most cases, into the nearest watercourse in a crude state. In some few cases it is filtered before entering the stream; in other cases it is deposited on the land. There have been no complaints during 1911 as to the disposal of sewage, except from the Chester Water Works Company. No alterations or extensions have taken place in the disposal works during 1911.”

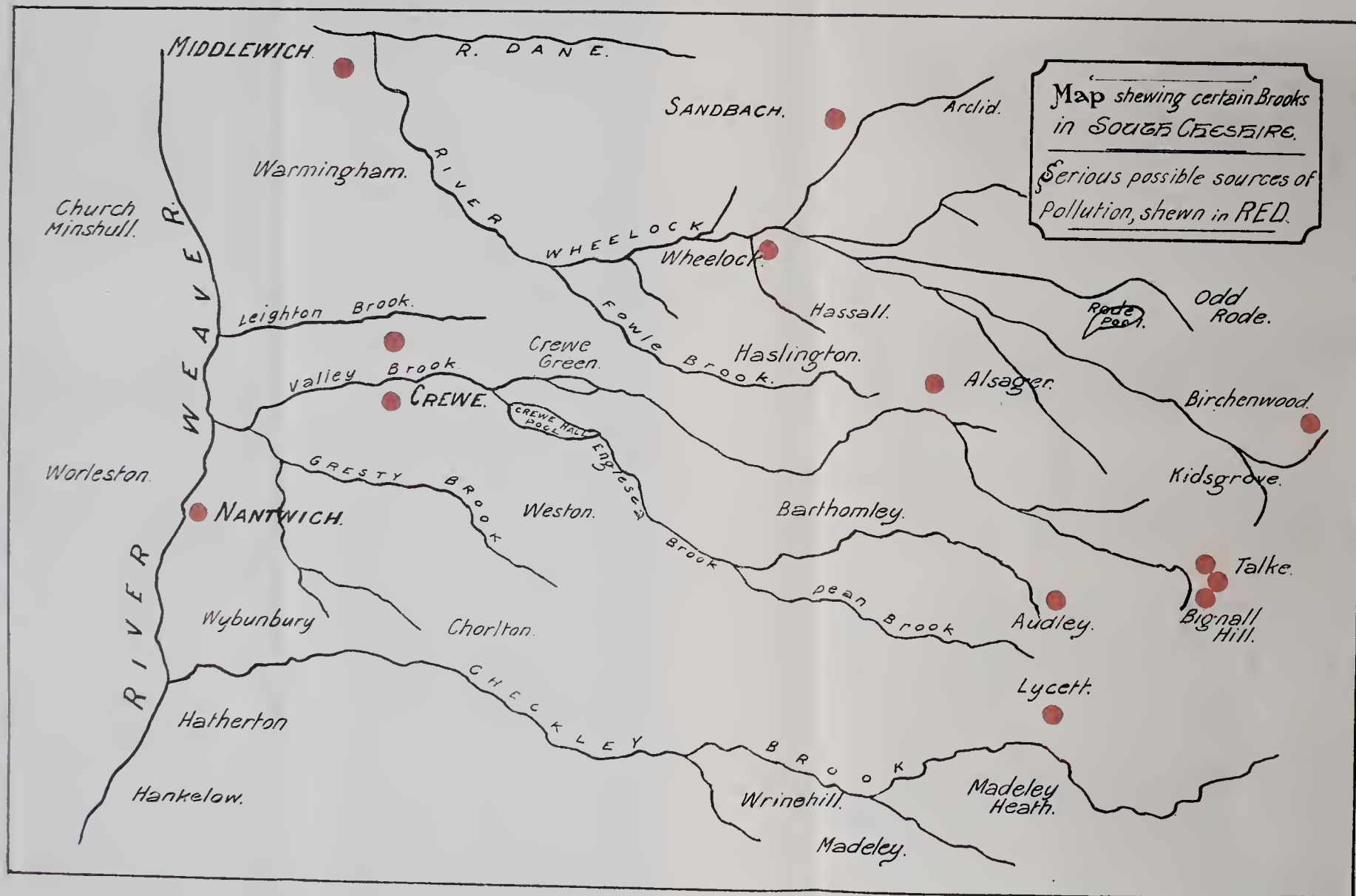
Section VIII.—Rivers Pollution.

This constitutes a considerable portion of my routine work even though, as your Committee knows, I observe the understanding that none of the rivers or streams in the Mersey and Irwell watershed are supposed to be under my jurisdiction. In the event of my discovering anything in this watershed which is not as it should be, I communicate with Mr. Hugh Stowell, of the Mersey and Irwell Joint Committee and the matter receives prompt attention. This leaves me, speaking generally, with the supervision of rivers and streams liable to receive pollution in the watersheds of the Weaver, Dee, Dane and Gowy. The work is extremely difficult and complicated. Difficult, because of the vast number of tributary streams and brooklets which have to be followed along winding courses over many miles before sources of pollution can be traced to their origin. Difficult, also, because although a sewage disposal plant may be in perfect working order on the date of inspection, it may be (wilfully or otherwise) quite out of order a few days later. Complicated, because of the many chemical, biological, bacteriological, engineering and legal aspects which have constantly to be borne in mind.

I have to trust solely to such evidence as I can collect on more or less chance visits and the intermittent collection of samples by my School Medical Inspectors, by local Sanitary Inspectors, or by persons who chance to be interested in fisheries, &c.

I have often wished to be able to visit some sewage disposal plants late in the evening, or even at midnight, in order to ascertain whether, for example, crude sewage were being run direct into some river (as I have reason to suspect it is in certain cases), but there are serious difficulties in the way, and so far I have not been able to arrange for any such nocturnal visits.

I am engaged on the preparation of maps shewing the streams and rivers liable to pollution, and the sources from which they are polluted; but it has proved a much more serious piece of work than I anticipated, and will demand a great amount of time, and involve much visitation of special localities, before it can be completed. When I tell your Committee that the preparation of a small map, shewing the pollutions of the brooks flowing into Cheshire from Staffordshire, occupied some 120 hours, the extent of the task for the four water-sheds named may be imagined.



The appointment of an Inspector to assist in this and certain other work has now become almost an imperative necessity, and I should be grateful if your Committee would, at an early date, consider the question of such an appointment.

A fair amount of really good work has been effected in the County in the matter of improvement of rivers and streams, but a vast amount still remains to be done. The most serious pollution with which the Committee have to deal is that coming from the Staffordshire Collieries. It consists, as the Committee know, of spent liquor from ammonia recovery plants and of fine dust from slack-washing. The latter is an easy matter to deal with and only calls for the construction of ample settling tank accommodation and the regular cleaning of these tanks; the material recovered is valuable to the manufacturer. The spent liquor from ammonia sulphate plants is literally an atrocious impurity and it is a matter of surprise that up to the present no ready means of purifying it has been devised. It is highly destructive to plant and fish life unless enormously diluted. There are, too, certain legal difficulties in the way of which your Committee are aware which limits decisive action.

As this question is continually coming before the Rivers Pollution Committee I have constructed a very rough diagram based on one of the maps I have prepared shewing how the several collieries contribute to this particular pollution and indicating other possible and serious sources of pollution.

The remarks of some of the Medical Officers of Health on this matter are of interest :—

HYDE MUNICIPAL BOROUGH.—"The only stream in the Borough receiving sewage is Wilson Brook, which receives the sewage from about six houses in Godley. Negotiations are now in progress for the termination of this nuisance."

BOLLINGTON URBAN DISTRICT.—"The prolonged period of heat and drought of last summer caused a recrudescence of the complaints which formerly were so common as to the foul smells arising from the river course. The wetness of previous summers had allayed the complaints, but during the past year they have been as strong and frequent as they were some years ago.

"Conditions now, however, are very different. Since that time the district has been well sewered and drained, so that no longer is it possible to lay the trouble to the need of a proper

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drainage system. Scwage, in the usual sense of the term, no longer finds its way into the river to any but perhaps a very slight extent.

“From the complaints it was noticed that at certain intervals, frequently in the early night, the smells arising have intensified and lasted for a short period of time during which it was a very uncomfortable experience to be anywhere near the river side.

“A determined effort was made to try to get to the bottom of the trouble, and a special inspection along the course of the stream was made by your Medical Officer of Health, together with the Nuisance Inspector. As a result of this inspection a report was drawn up by your Nuisance Inspector and submitted to the Council. Copies of this special report were sent to the Local Government Board, the Council, and the Mersey and Irwell Commissioners.

“It was found, 1st—That the course of the stream was by no means clear, that it was obstructed in its bed by large blocks of loose stone and rubble. 2nd—That waste matter and refuse is constantly being thrown into the stream by the occupants of adjoining property. This waste matter was frequently vegetable refuse, there was also some decaying meat. Numbers of old canned meat and other tins were found. Pieces of linoleum and other worn out household goods were to be seen. These various articles sometimes themselves blocked the flow of the stream, at other times they were caught by the loose blocks of stone lying in the bed. In either case they were the centre of small areas of putrefaction which lay baking in the sun. 3rd—The filter bed at the Lower mill did not appear to be as efficient as it ought to have been. 4th—The filter bed at the Brewery was out of use and from its appearance it must have been so for some considerable time. In the yard there where the barrels are washed there is a pit into which the washing of the barrels find their way. This pit, owing to the failure of the system for its emptying, then in use, was in a very bad condition. 5th—The system of settling tanks and filtration of the water polluted by the effluent from the bleach works higher up stream was evidently not working in a continuous and satisfactory manner. 6th—Both mill pools--that below the bleach works and the other below the Brewery--appeared to be in need of a thorough cleansing.

“Your Committee in considering this report, agreed with the Nuisance Inspector as to the advisability of cleansing the bed of the stream of all removable obstruction so far as they are able,

they further agreed to have notices put up, warning persons against throwing waste material into the stream.

“Occupants of houses on the river side would do well to remember that it is hardly fair to complain about the Council’s attitude on the matter, when they themselves are, to some extent, even if only slight, the cause of the trouble. There are not a few who perforce live on the river side who are careful in this matter and one would not imply that all are guilty in this respect.

“It was further suggested by your Committee that the Mersey and Irwell Commissioners be asked to give this matter their serious attention. This was done and the river was again inspected by their inspector. The chief result of this visit was that a new pump was put in at the Brewery, so that the contents of the pit there should be carried on to the filter beds in a more efficient manner.”

BROMBOROUGH URBAN DISTRICT.—“Several small streams which have traversed the greater part of Wirral pass into your district to fall into the Mersey at Bromborough Pool. These streams are polluted by house drainage and by effluents from sewage works at various points in their course.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“The River Gowy forms part of the eastern boundry of the district and its waters are polluted by house drainage. In an outlying area a waterway has been polluted by the overflow from a cesspool situated in the district of a neighbouring authority. An abatement of the nuisance has taken place and the houses concerned in producing the nuisance are to be allowed to drain into your sewers.”

HANDFORTH URBAN DISTRICT.—“The two small streams of the district and the river Dane are more or less ‘sewers.’” This brief but pointed statement shews a condition of affairs which should be taken in hand at once and kept in hand until the reproach is properly removed.

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—“The only stream in the district is the boundary ditch between Wirral Rural area and your own. The dry summer revealed a certain amount of pollution of this stream by house drainage. Removal of this source of pollution has been undertaken by the persons concerned.”

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NORTHWICH URBAN DISTRICT.—“There is no pollution of rivers either from private or public sewage works, nor to any serious extent from solid matter or trade elements. There is some pollution from house drainage, but the new sewerage works will remedy it.

“A new scheme is in progress for sewerage the town proper and a large portion of Leftwich, the plans, etc., having been approved by the Local Government Board. It is well advanced and should be complete during the coming year.

“The sewage is disposed of by precipitation and bacteria beds and percolating filters are about to be added.

“Complaints were received of nuisances arising from the joint outfall works at Winnington, but the Urban Council denied that the smell came from the works.”

TARPORLEY URBAN DISTRICT.—“In this district the streams are fairly free from pollution, with the exception of the brooks in the Townships of Eaton and Utkinton, which are polluted by house drainage and farm sewage; there is no manufacturing waste or effluents entering them.”

WINSFORD URBAN DISTRICT.—“There are no rivers or streams beyond the River Weaver. This river and its tributaries flow through the great salt-making district of Cheshire, which includes also a considerable number of chemical works. My private opinion is that any little organic pollution arising in this District is of no importance whatever, in view of the normal condition of the river.”

CHESTER RURAL DISTRICT.—“In this district some of the streams are polluted. The Helsby Sewage Works in the Runcorn Rural District polluted the Hapsford brook with the storm overflow; this has been remedied and more attention paid to the pumping station. At Great Saughall the stream is polluted by the house drainage of the whole village. A sewage scheme is now under consideration. House drainage pollutes the River Gowy at Mickle Trafford, and some cottages pollute the brook at Abbots Meads. No manufacturing waste or effluents cause pollution.”

CONGLETON RURAL DISTRICT.—“There have been complaints about the pollution both of the North Stafford Canal and one of the sources of the river Wheelock. This pollution comes from the

Birchenwood Colliery and the Kidsgrove Town sewage, both polluters being situated in the neighbouring County of Stafford."

MALPAS RURAL DISTRICT.—"In this District there seems to be little pollution of the streams, except from house and farm drainage. The farm drainage and sewage should be dealt with on the land. There was a complaint about the effluent from the Malpas public sewage disposal works polluting a stream. This was due to the very heavy rains in December causing flooding. This has and is receiving attention to prevent recurrence."

NANTWICH RURAL DISTRICT.—"The river Weaver is still polluted by the crude sewage of the Nantwich Urban District Council and to some extent by that of the Borough of Crewe. The streams entering the District from Staffordshire are at times grossly polluted by mining and chemical refuse. Near the end of the year the water in the brook running into the Crewe Mill Pool was found to be poisoning the fish. I obtained some of the poisoned fish and a sample of water taken at the time the fish were found to be dying. The fish and the water were found on analysis to contain Carbolic Acid and Sulpho-Cyanides. I have no reasonable doubt that this pollution came from a chemical works in Staffordshire. The Checkley brook, which for some years has shown signs of improvement, has during the last few weeks of the year shown signs of gross pollution by mining refuse which also comes from Staffordshire."

In the RUNCORN RURAL DISTRICT, Dr. Adams says:—"I am able to state officially that the pollution of rivers occurring within your district, subsequent to the tour of inspection undertaken by Dr. Vacher, your Inspector of Nuisances, and myself, has been reduced in most cases to a practically irreducible minimum.

"I am aware of several brooks or water-courses which are undeniably receiving sewage from various houses in several townships within your area, but, as your advisory officer, I am not prepared to recommend to your Council that costly schemes of sewerage construction shall be undertaken to remedy defects—frankly admitted—which can otherwise be remedied by persistent and well-directed care. The sewers and open gutters, or ditches, at Moore furnish a case in point. If these ditches, channels, or water-courses, receiving sewage from ten or a dozen houses, each had been from ancient time to now digged, cleansed, and kept open and running freely, no Moore sewerage question would ever have arisen.

"Since my former report upon this subject the question of sewerage for the parish of Moore has taken a salutary turn, an engineer has propounded a sewerage scheme, and the same is now under the consideration of your Council.

"On the level of the River Mersey's alluvial "score" or "flat," of Frodsham and Helsby, two sewerage schemes have been planned, one for Frodsham and the other for Helsby. Both of these are at present working satisfactorily.

"I do not consider that there is any necessity for your Council to entertain the inception of further sewerage schemes at present, beyond the proposed scheme suggested for the Thelwall and Grappenhall and Latchford Without area.

"A sewerage scheme for the Frodsham Bridge portion of the parish of Frodsham has been devised, and it is to be hoped that it will be carried in the near future. The adoption of the Housing and Town Planning, &c., Act, 1909, has necessitated this being done."

TARVIN RURAL DISTRICT.—Dr. Burton reports as under:—
 "In this District all the tributary streams of the Gowy are more or less polluted by farm sewage, which should be dealt with on the land. (1) Private Sewage Disposal Works are likely to pollute the brook at Tattenhall, and the Dee at Farndon. (2) Solid matters, accumulation of cinders, refuse, sludge, &c.—The River Dee at Farndon, the brook at Tattenhall, and at Churton Heath. (3) House Drainage.—The River Dee at Farndon, the Ilston brook, Churton Heath and Tattenhall. (4) Manufacturing waste or effluents.—The Bone and Glue Works, Tattenhall Road; the Creamery, Tattenhall; and a cheese factory at Churton Heath."

A special report is appended on the sewage disposal in Tattenhall, Farndon and Churton—all of these being cases which the Tarvin Rural District Council should take in hand at the earliest possible date.

WIRRAL RURAL DISTRICT:—Dr. Yeoman reports to his Council as under:—"There are certain streams running through your district which are polluted by house drainage. The stream which runs from Heswall to Raby Mere through the hamlet of Brimstage also receives the effluents from Clatterbridge Workhouse filter beds and the fever hospital sewage purification apparatus. The stream which runs through Thornton Hough and Raby Vale into Raby Mere is fouled by sewage.

“The works in process of construction to purify Thornton Hough sewage will do much to rectify the unsatisfactory condition of this brook.

“Residences which are distant from sewers and drained into cesspools not infrequently are found to have connected unauthorised overflow pipes to ditches, and in this way the ditches soon become insanitary.

“Sewage from the villages of Prenton, Noctorum, Upton, Bidston, and Moreton passes through the Fender Valley Outfall Sewer.

“Sewage from Willaston, Gayton, Childer Thornton, Hooton, and part of Eastham is treated in Septic Tanks and Bacteria Beds.

“Heswall, part of Eastham, Great Sutton, Little Sutton, Caldy, Poulton through Lower Bebington Sewers, and Grange through Hoylake Sewers, discharge sewage directly into tidal waters.

“During 1910 land was acquired for the treatment of sewage, and sanction obtained for sewerage of Thornton Hough. This work is in course of construction, but a considerable delay has occurred in beginning the scheme.

“The Fender Valley outfall sewer gave way at several points owing to faulty workmanship in its construction, and has given rise to a large amount of anxiety as to its stability.

“At Willaston, persons interested in the laying out of a building estate brought a charge against you of making default in providing this portion of the district with sufficient sewers. A public enquiry was held by one of the Local Government Board Inspectors, and after hearing both sides a compromise was arrived at whereby the Council undertook to provide sewers and the building estate to pay part of the expense of the undertaking on agreed terms. Your byelaws provide that houses which are far from sewers may be drained to properly constructed cesspools. These cesspools comply with the byelaws when the houses are built, but from the evidence at the Willaston enquiry, and from my own observation, overflow pipes are soon attached to them, or apertures made so that the contents escape into the surrounding soil. At Ness Holt the existence of such an overflow attached to a surface water drain led to a nuisance which has now been remedied.

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"A complaint similar to the Willaston one was made by the Committee of the Heswall Nautical School, Liverpool, Toxteth, and West Derby Sanatorium, and a property owner, and was investigated by a Local Government Board Inspector.

"At Caldy another inquiry was held relating to a scheme for the construction of sewers and a sewage purification work for a building estate in that village. The sewers are to be constructed by the owner of the estate, who is also giving the land necessary for the purification works.

"These enquiries and the constant demand for new sewers and extension of existing ones, emphasise very forcibly the change which is taking place so rapidly in Wirral, viz., from a rural to an urban district.

"At Grange an aggregation of houses has taken place, so that very soon you will be called upon to determine what steps are to be taken with regard to the sewerage of that village.

"Over $3\frac{1}{3}$ miles of sewers have been laid during the year."

Dr. Jubb has kindly undertaken in his spare time an inquiry into the sewerage of Churton and Tattenhall (Tarvin Rural District), and reports as follows :—

CHURTON SEWAGE DISPOSAL—The Village of Churton lies partly in the Parish of Farndon and partly in the Parish of Aldford. Half the village drains towards the River Dee, and half the village towards the Churton Brook, which joins the Aldford Brook.

There are only 2 W.C's in use, the other houses and cottages being equipped with pail closets.

At present there are two main schemes of sewage removal dealing with the drainage of most of the houses, the drainage of a few houses which are out of these schemes being dealt with individually.

I.—A sewer passing along the road in the direction of Farndon and terminating in an open pond in the field.

This sewer receives the drainage of two houses in Churton-by-Aldford—Kingsmead (Mr. Carr's) and the White Horse Public House—and of 20 houses in Churton-by-Farndon.

This open pond also receives a drain from Williamson's Farm as well as the sewer. The pond is 25 yards from the public road, and frequently gives rise to a nuisance.

The pond at the time of visit was covered with a thick seum. It had an overflow by means of a culvert into a field, and the sewage was distributed into two surface channels (parallel with road) alternately, by means of a slate. The nearest water course is the Dee, $\frac{3}{4}$ mile away.

There was a proposal to do away with this pond, take the sewage to a tank right across the field in the corner furthest from the road, and place filter beds in the ditch below the tank; but this has been withdrawn on account of tenants' objections.

II.—A sewer from Churton-by-Aldford, passing down the left hand side of road leading down to Churton Brook, and entering open ditch below last house. The open ditch lower down enters Churton Brook. This sewer receives the drainage of about 20 houses in Churton-by-Aldford, it receives a branch from houses on side road on left hand, and lastly it receives the drainage of four small cottages on left hand side of road.

III.—Other drainage arrangements in Churton—

1. Stanage Farm (Lewis) and 3 cottages *on Dee Side*.

Drainage taken to a tank below farm in field. Tank is equipped with wheel pump for removal of sludge. Tank is about $\frac{3}{4}$ -mile from Dee. There is an overflow, which could be traced about 200 yards and then disappeared. A large amount of whey was found at time of visit as there was an outbreak of swine fever at farm.

2. Two cottages, Dee View, $\frac{1}{4}$ -mile from Stanage Farm, simply a drain pipe opening into field. Discharge could be traced for 10 yards.

On Brook side:—

3. Churton Hall Farm (Bellis), on right side of road to brook. Drainage received into tank with overflow.
4. Small cottage below Bellis' farm. Drains on to field.
5. Church House Farm (Allwood). Tank with overflow which discharges directly by pipe into the Churton

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Brook. There was a fairly large volume of sewage discharging at time of visit.

6. Mrs. Meador's house. There is a w.c. here. Sewage is taken to a tank without overflow, which is emptied and contents put on land.
7. Grange Farm (Home Farm, Duke of Westminster). Tank with overflow into surface channels arranged roughly as broad irrigation. Overflow discharge is about 200 yards from brook, but the fall towards brook is very sharp and sewage finds its way directly into the brook occasionally, although traces of sewage stopped within 20 yards of brook. This farm is some distance from the rest of Churton.

The Scheme suggested by Mr. Boden, the Sanitary Inspector, is to cut Sewer I. where it enters the field and carry it across the road and across the lower meadow nearly to the brook. This sewer would take branches from Bellis' Farm and from cottage below.

Sewer II. would be taken where it enters ditch, carried across road into meadow, and join Sewer I. at tank. It would take any necessary branches.

The tank would be $20 \times 10 \times 7$ ft.

The filters would be $150 \times 5 \times 3\frac{1}{2}$ ft.

The cost would be about £150.

A Scheme for the amendment of these conditions is at present before the District Council.

TATTENHALL SEWAGE DISPOSAL.—Tattenhall is a village of about 600 inhabitants, situated about $4\frac{1}{2}$ miles from the Dee. The Tattenhall brook, which joins the Aldford Brook, runs through the village and crosses below the village street. A little lower down the road and running parallel to the brook there is a smaller brook, which receives the overflow water from the mill pond and joins the Tattenhall brook outside the village. These two water-courses receive practically all the crude sewage of the village, including the contents of many water closets, the drainage of a slaughter-house, a creamery, a corn mill, and the gas works. Both water-courses were very foul at the time of visit, but the condition of the main brook was, if anything, more serious than the other. Four chief outfalls were found :—

- a. The upper part of Tattenhall is drained by a sewer which runs down the main road from the upper end of the village to the first bridge. This sewer receives the contents of 20 w.e.'s. Near the head of this sewer there is a flushing tank which receives the drainage of six houses (1 w.c.) It is the practice to hold up the sewage in this tank for a week and then flush the sewer by letting the contents of the tank escape, usually on Saturday mornings. At the time of visit there was considerable deposit in the tank and the emptying was not very complete and not very effective. The tank holds 200 gallons and took about 3 minutes to empty.

This main sewer discharges into the Tattenhall brook, below the surface of the water, about a foot above the bridge. There is quite a good fall on this sewer. Drainage from the creamery, from the mill and from the gas works discharge into this part of the brook.

- b. A large drain takes the drainage of 30 houses in the lower part of the village, and discharges into the lower water course, a little to the west of the village. The drains of the new school are being connected to this sewer.
- c. Tattenhall Hall and 3 cottages drain into a pipe which also carries a large volume of spring water. This pipe discharges into lower water course, near lower bridge, and to east of village.
- d. A ditch alongside the road leading to Tattenhall Station receives the drainage of a dozen cottages and one farm. This ditch was very foul, and the sewage ultimately finds its way to the Tattenhall Brook.

The sewage from the new Institute (2 w.e.'s) is piped into the lower brook.

Other methods of disposal :—

At Millbank (Filney) a cesspool with chain pump was found. The overflow could be traced to a cow pond, whence there was no outlet.

At the Rookery (Wignall) a septic tank was found with 2 filter beds filled with coke. Effluent passes down shallow ditch, filled with coke and clinker alternately, to discharge into Tattenhall Brook. The effluent appeared to flow beneath the material, but was clear, and the works were free from smell.

At Frog Lane Farm (Mossford) two old filter beds were found, but these are now practically open septic tanks, as the filtering material had been removed, and the beds were filled with sludge, with a thick scum on the surface. The works were very foul, and overflow was into a ditch, and ultimately to Tattenhall Brook.

Section IX.—Housing.

It is felt that this is now becoming such an important matter to Sanitary Authorities that the fullest possible information should be circulated. Accordingly, I quote at some length from the Reports of the District Medical Officers of Health. It is abundantly manifest that there is distinct activity in all the sanitary areas in the County of late years, and that this has been aroused by the recent Housing (Inspection of District) Regulations. I have been called in on a number of occasions to consult with District Medical Officers of Health on questions connected with housing, and have had some most interesting problems presented for solution.

The Housing and Town Planning Act has been liberally interpreted by the majority of Local Authorities, particularly that portion of it relating to housing pure and simple. The regulations of the Local Government Board have been loyally carried out, and registers of houses are rapidly filling up. Some difficulties have arisen as to the kind of house which comes within the operation of Section 17 of the Act (the Closing Order Section). It may be stated that there are three classes of house which clearly come within that Section:—

1. Houses in such a state as to be dangerous or injurious to health so as to be unfit for human habitation, that is, houses such as, before the repeal of Section 32 of the Housing of the Working Classes Act, 1890, could have been represented under that Section.
2. Back-to-back houses (under the conditions laid down by Section 43 of the Housing and Town Planning Act).

3. Underground rooms habitually occupied as sleeping places within the limitations laid down by Section 17 (7) of the Town Planning Act.

Dilapidated old houses which cannot fairly be described as insanitary, or dangerous to health and verminous houses cannot properly be dealt with under Section 17 of the Housing and Town Planning Act. Such, however, may be dealt with under Section 15 of this Act if they came within the rentals stated in that Section, and if fresh contracts have been entered into with respect to them since December 3rd, 1909 (the date of passing of the Act). The landlord of such houses may be called upon to make and keep them in a state "reasonably fit for habitation in all respects."

In making Closing Orders under S. 17 care must be taken, in view of the decision of the Court of Chancery in *Rayner v. Stepney Borough Council*, to state clearly the power of appeal to the Local Government Board open to the owner. It should also be made clear that when Closing Orders have been made, and the owner has not rendered the houses, the subject of such Closing Order, fit for human habitation, the Local Authority *must* enforce demolition under S. 18. There is no provision for sanctioning the use of premises which have been closed under S. 17 for other purposes, *e.g.*, as workshops, warehouses, store-rooms, &c. The Scottish Local Government Board have sanctioned this, but so far no steps have been taken to this end in England.

At the time of writing this Report the **Rural Housing Bill** is before Parliament. The general provisions are familiar to those who follow parliamentary news.

The Bill is in many ways a move in the right direction, and would, if enacted, remove many of the difficulties inseparable from housing in rural areas. But it is very questionable whether the setting-up of a new department of the Local Government Board, and the transference to the new Insurance Committees (who appear to have a heavy enough load to carry as it is) of duties which could be better carried out by existing bodies, is the best way to secure this.

My own opinion is that if the machinery for advances of money, and for the early acquisition of land, and repayment of loans were retained in the Bill, and if existing Local Authorities had those privileges and facilities transferred to them, they would be only too glad to make use of them; and the question of Rural

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Housing would before long be freed from the reproaches which are so frequently—and with much truth in many cases—cast at it.

CONGLETON MUNICIPAL BOROUGH.—“Under the Town Planning Act, 72 houses were scheduled by the Medical Officer of Health, and the Sanitary Inspector made 49 inspections and found 76 defects, 8 of which he had remedied under the Public Health Act, but he declined to report the result of his inspections or to proceed further under the Town Planning Act, alleging he had not been properly appointed Inspector, in respect that you did not intimate to him in writing that he had been so appointed.”

This appears a frivolous objection to have been taken, and, moreover, one which a few strokes of the pen would rectify. A new Inspector has now been appointed.

CREWE MUNICIPAL BOROUGH.—“The Borough Surveyor (Mr. George Eaton-Shore) has been good enough to give me the following figures as to plans passed and habitation certificates granted :

	Plans.	Habitation Certificates.
Average Yearly No. 1891-1900 ...	263	268 (3 years only)
„ „ „ 1901-1910 ...	148	141
Number in 1911 ...	33	28

The number of plans submitted and habitation certificates granted are the lowest yet recorded. Nine of the 28 new dwelling houses are included in the number of houses occupied on June 30th. The remainder were built in the second half of the year.”

“The systematic house inspection required under this Act was begun in the Borough during 1911. The Act applies to 9,129 houses under Section 14.

“The areas to be inspected were selected, and those where it was known to be most required were visited first.

“The number of houses and the result of the inspection in each case is appended :

No. of Houses.		No. found in good condition.	No. dealt with by Closing Order.	Result.	No. for which Notices served.	Result of Notices.		
				Closing Orders determined.		No. remedied.	No. being remedied.	Nothing done.
Inspected under Section 15	} 34	5	2	2	27	19	3	3
Inspected under Section 17	} 94	10	23	23	61	41	11	9
Total	... 128	15	25	25	88	60	14	*12

* 7 of these are empty houses.

“The closure of two houses under Section 15 was done voluntarily by the owner.

“In all cases the work required to make the houses habitable was carried out, and the closing orders duly determined.

“Where the condition of the house was such that certain defects required to be remedied, notices were served on the owner, and in no instance had this to be followed by a closing order to enforce the requirements. Property owners have been most ready in Crewe to meet the Health Committee in this work, and in some instances the owners did much more to the houses than was specified as essential, thus materially improving the value of the property.

“No cases of overcrowding were found in the routine inspections, but 7 instances were found by other means. An informal notice was complied with in each case.

“There are 65 back-to-back houses in the Borough and 8 were demolished in 1911. Most of them are in blocks of four with ample ground space around them.”

DUKINFIELD MUNICIPAL BOROUGH.—“The house accommodation is, on the whole, decidedly good. Much of the worst property has been demolished or remains unoccupied. The majority of the people in the town belong to the working class, and during the last few years many excellent cottage houses have been built, fitted

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with modern sanitary arrangements and conveniences and with plenty of air space. The number of plans submitted and passed for new houses is 30 compared with 40 in 1910, 50 in 1908, 61 in 1907, 61 in 1906, and 24 in 1905. In every case the drains are thoroughly tested by the Surveyor, and strict supervision is taken by him as regards structure and air space and fitness for habitation.

“The average inhabitants per house occupied is only 4.19 compared with 4.48 in 1901, so that the cases of overcrowding are very few indeed and are becoming less every year. We have a complete list of four-roomed houses where eight and upwards are living, and the Inspector is very assiduous in tactfully altering matters where practicable. Judging from our reduced birth rate in recent years, in my opinion there is very little cause for anxiety on this score.

“We have a list of back to back houses, and the worst class of property is kept under careful and periodical inspection, and improvements and alterations are insisted upon being done when necessary.”

ST. JOHN'S HYDE MUNICIPAL BOROUGH.—“The following list of back to back houses should be converted so as to provide thorough ventilation :—

No. 34, Brook Street, and house behind.

No. 37, Commercial Brow, and house behind as No. 8, Water Street.

No. 8, Higham Lane, and house behind.

Nos. 59 and 61, Old Road, and two houses behind.

No. 25, Cheapside, and house behind.

Nos. 151 and 153, Back Lane, and two houses behind.

No. 33, Croft Street, and house behind.

“In the following list of single houses, through ventilation should be provided :—

Nos. 2, 3, and 4 Unsworth Court.

No. 4, Shawcross Street.

No. 26, Mottram Old Road.

Nos. 1 and 2, Dakin Court.

No. 10, Catherine Street.

No. 2, Catherine Street.

No. 1 May Court. The yard belonging to this property should be re-arranged, the ashpit should be done away with and ashbins provided. More closet accommodation should be provided. There are only two closets to supply eight houses.

Nos. 3 and 5, Catherine Street.

No. 14, Godley Hill.

“The following property has been put in a sanitary condition during the year :—

“No. 55, Mottram Old Road, two back to back houses have been converted to one house with through ventilation.

No. 32, Ridling Lane, and house behind.

No. 6, Queen Street, and 1, Unsworth Court.

One cellar dwelling in Acorn Lane has been closed.

“The ashpit accommodation in Charles Street and George Street has been improved. Ashbins on Quine’s system have been supplied to 28 of the houses, which are very satisfactory. The remaining seventy-nine have been fitted with imitation system which I am afraid will not be so satisfactory. The common passage, which formerly served as an ashpit to the two rows of houses should now be paved.

“Thirty-four new houses have been built during 1911. 655 dwelling houses have been inspected under S. 17 Act of 1909, none of which were considered unfit for habitation, 48 defects were remedied without closing orders being made. The estimated number of houses within limits of rent in S. 14 of Act of 1909 is 7,374. The approximate number of back to back houses in the district is 40. There is one cellar dwelling.

STALYBRIDGE MUNICIPAL BOROUGH.—“It is only to be expected that in an old town like ours there will be many dwellings which through unsatisfactory situation and surroundings, defective and improper construction, or neglect of reasonable repairs and cleanliness, have in course of time become very unsuitable homes for human beings.

In some parts of the town the natural conformation of the land in the way of sudden depressions and elevations has contributed to the erection of dwellings which, judged according to modern requirements in sanitation, must be considered most

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unsatisfactory, and it is no easy matter to determine what is the best course of action to adopt in order to improve such dwellings.

“During the year many dwellings have been under observation, and of them 28 were carefully inspected and reported upon, nine of them being represented as unfit for habitation, and 19 of them as requiring various alterations and repairs to render them reasonably fit for human habitation.

“In respect of the nine represented as unfit for human habitation Closing Orders were issued by the Council.

The properties referred to were the following :—

- No. 5, Wood Street—situated beneath a dwelling above ; one living and one sleeping room—the sleeping room being damp and ill-lighted and ill-ventilated. Closing Order was issued.
- 1 and 3, Hardy’s Buildings, off Wood Street--beneath dwellings above. Bedroom underground and deficient in light and ventilation. Closing Orders issued.
- 2, 4, 6, Seel’s Yard—Single-roomed dwellings. Certain alterations required.
- 5, 7, 9, 11, 13 and 15, Cocker Hill—Sundry defects as regards light, ventilation, dampness, drainage and sanitary conveniences. Closing Orders issued.
- 63, Springbank Street—Dampness and need of certain repairs. Improvements ordered.
- 6, 8, 10, 12, Grasscroft Street and 2, 4, 6, 8 and 10, Kay’s Yard—Back-to-back houses, ill-ventilated and in need of sundry repairs.
- 1, 3, 5, 7, 9, 11, Kay’s Yard—Built against rising ground behind, damp, ill-ventilated, and in need of repairs.”

WALLASEY MUNICIPAL BOROUGH.—The Medical Officer of Health gives the following summary of work done :—

“No. of houses inspected under Section 17 of the H.T.P.A., 1909	...	...	19
No. of houses found unfit for habitation	...	...	15
No. of houses represented to Local Authority for Closing Orders	...	...	12
No. of Closing Orders made	...	...	8

No. of houses where defects were remedied without making of Closing Orders	...	7
No. of houses made fit after making of Closing Order	... ..	—

GENERAL CHARACTER OF DEFECTS FOUND.

1. Lack of sufficient or through ventilation.
2. Inefficient water supply, *e.g.*, one standpipe for several houses.
3. Lack of proper w.c. accommodation.
4. Damp and dark rooms.
5. Lack of conveniences for decent living, *e.g.*, proper facilities for storing food, washing accommodation, &c.
6. General dilapidations.

“The following additional work has been done under Sections 14 and 15 of the Housing, Town Planning, &c., Act, 1909 :—

Statutory Notices served	...	76
„ „ complied with	...	68
„ „ in hand	...	8
„ „ not complied with	...	—

“There were no appeals during the year.

“In the work in regard to insanitary property there has always been kept in view the fact that any work of demolition must not be done too rapidly, so that hardship may not be inflicted on tenants by their being unable to find suitable houses in the time at their disposal.”

ALDERLEY EDGE URBAN DISTRICT.—“House accommodation generally is good, the supply appears to be sufficient. One or two cases of overcrowding came under notice, and on attention being drawn to the fact, were remedied.

“Two hundred and seventy-five general inspections were made of dwelling-houses.

“Nine inspections were made under Section 17 Act of 1909. There were no defects of a serious character, and the reports are now being considered. One new house was built during the year.”

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ALTRINCHAM URBAN DISTRICT.—“The cottages already provided by the Council are practically self-supporting, but an extension of the scheme is coming forward. Part of this extension is already sanctioned by the Local Government Board, and part still under their consideration.

“In Dale Square a scheme for the complete improvement of this district is, by consultation with the owners of property there, arranged, and is being carried out.

“In the matter of the Police Street area.—the Council is seriously engaged in dealing with this insanitary area, which it proposes to acquire and deal with in a satisfactory manner.”

ASHTON-ON-MERSEY URBAN DISTRICT.—“I am of the opinion that there is a sufficiency of houses for the working classes in the district, and the general sanitary condition of the same is satisfactory; any defects found are immediately taken in hand. There is no need whatever for the Council to take action under the Housing of the Working Classes Act.

“One case of overcrowding came to my notice during the year, but this was remedied immediately on receipt of notice from the Inspector.

“Proper supervision is given by the Council’s Surveyor to the erection of new houses, and certificates of habitation granted when the same are in his opinion satisfactory.

“With regard to the Housing (Inspection of District) Regulations, 1910, as mentioned in my Annual Report, 128 houses were inspected, and in none of these cases did I make a representation with a view to the making of a closing order, though to three cases I called your attention, and as a result, am submitting to you representations to make closing orders.

“Under Section 17 of the Housing and Town Planning Act, 1909, 128 houses have been inspected. Notices have been served in 41 cases, which have all been complied with. 68 inspections are now before the Council, including three cases of houses unfit for habitation. The work under this Section will be proceeded with as quickly as possible, and reports will be made to you as occasion requires.”

HIGHER BEBINGTON URBAN DISTRICT.—“Housing accommodation is sufficient, but there do not appear to be any empty

cottages in the district. There does not seem to be any overcrowding. The number of inhabited houses at the time of the Census in April, 1911, was 353, an increase of 43 in ten years. The average number of persons per house was 4.7 as contrasted with 4.97 at the 1901 Census."

LOWER BEBINGTON URBAN DISTRICT.—"In some parts of New Ferry there is a deficiency of houses for artisans, as two or more families appear to be taking up their residences in dwellings of small size. Bye-laws to deal with houses sublet in this fashion would be of advantage to the district. There is sufficient open space about the houses, and as a rule the surroundings are in a cleanly state. Strict supervision is exercised by the Surveyor's Department over the erection of all new buildings. At the 1911 Census there were 2,300 inhabited houses in the district, with an average of 4.9 persons per house. The following is a tabular statement of work done under the Housing (Inspection of District) Regulations :—

Number of new houses built during 1911—

Bebington	...	...	...	56
New Ferry	...	...	...	23
Port Sunlight	...	...	...	10
Total	...	...	...	89

"The following Table shows the extent of the work done :—

Number of dwelling-houses inspected under S. 17 Act of 1909	...	...	...	33
Number of such houses considered unfit for habitation	...	...	...	13
Number of representations made to Local Authority	...	...	...	33
Number of closing orders made by Local Authority				15
Number of houses where defects remedied with- out closing orders being made	...	...	...	20
Number of houses where defects remedied after closing orders made	...	...	...	13
Estimated or ascertained number of houses within limits of rent in S. 14 of Act of 1909				1741
Number of such houses in respect of which notice was served during 1911	33

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Number of such houses closed after notice	...	2
Number of such houses where Local Authority has executed necessary repairs, etc.	...	0
Approximate number of back-to-back houses in district	... ..	2
(4 back-to-back houses were replaced by 3 houses with gardens in front and rear).		

There are no cellar dwellings in the district."

BOLLINGTON URBAN DISTRICT.—"The Census shews that there are 1212 inhabited houses—which gives on an average 4.3 persons to a house.

"The houses are for the most part built of stone, or stone and rubble, and with the exception of the newer ones which are built of stone—or brick with stone frontage—have no damp-proof courses. In this way a number of the houses are apt to be damp. This in some cases is made worse by the fact that one or other of the walls is below the ground level. These cases are being taken in hand by your Committee, and it is being insisted on that the level of the earth outside be cut down so that a free play of air may get to the walls.

"The air space at the back of the houses is, generally speaking, satisfactory. Here and there, however, it is too confined, the back area consisting only of a passage.

"By far the larger number of houses consist of only 2 rooms up and 2 down, and in such cases the sleeping accommodation cannot be considered satisfactory for any but small families. The newer houses however are better and have three bedrooms and sometimes a bathroom.

"All plans for new houses or buildings are required to be submitted in duplicate to the Council. They are considered by the Surveyor, who reports as to whether they conform to the bye-laws in force, before being passed by the Council. If they fail to do this they are returned to be made to do so.

"At the present time there seems to be a scarcity of houses and a demand for new ones. The difficulty seems to be to get new ones put up at a figure which would give the builder a reasonable return for his outlay. One combined house and shop has been erected during the year.

“A Special Committee was formed to go into the question of building houses under the Housing and Town Planning Act.

“This Committee met several times and, amongst other things, procured plans of houses likely to be suitable to the neighbourhood. These they obtained from other authorities and persons who had erected such buildings. The question of cost has been seriously considered in order to see if the Committee could recommend the Council to put up such houses. It was mentioned *inter alia*, that the Council's building bye-laws are too stringent, and in fact prohibitive. On this it was decided to go into the matter of the bye-laws and consider them alongside the bye-laws of such districts where suitable houses have already been erected in order to see if any alterations could be made by which it would be possible to erect some houses for the class of people who would need them, and who cannot afford to pay rent higher than those at present current in the district. To build under the present bye-laws seemed to the Committee to be a matter of impossibility except at a loss. This matter was, at the close of the year, still under consideration by the Sub-Committee.

BREDBURY AND ROMILEY URBAN DISTRICT.—“Inspections of the district have been made by the Medical Officer and sixteen houses were found to be in a state unfit for habitation. These were also inspected by the Sanitary Inspector and reported on to the Sanitary Committee and notices were served on the owners to do the necessary repairs. Three of these were considered to be beyond repair and were elosed. The repairs specified in the others have not yet been completed and closing orders will be issued if they are not attended to after the lapse of time given.

“Particulars of all these are entered in the proper books and kept for reference by the Council.

“The general character of the defects found to exist is that the woodwork has been allowed to decay for want of paint and repairs. The roofs and outside spouting have gone out of repair and cause dampness of the bedrooms and walls and they are not each provided with sufficient privy accommodation.

“The following table shows which houses have been dealt with, as above :—



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Houses declared unfit for habitation in their present state :—

Nos. 1, 3, 7, 9, Bredbury Green, Bredbury.
 Nos. 16, 18, Hole House Fold, Romiley.
 Nos. 65 to 73, Lower Bents Lane, Bredbury.
 Bardsley Hall, Greave Croft, Romiley.
 Maycroft Cottage, Brinnington.
 Two Cottages on Brinnington Moor.
 No. 2, Bunker's Hill, Bredbury.

Houses the repair of which would make them again fit for habitation :—

Nos. 1, 3, 7, 9, Bredbury Green.
 Nos. 65 to 73, Lower Bents Lane.
 Maycroft Cottage, Brinnington.
 Two Cottages on Brinnington Moor.
 No. 2, Bunker's Hill.

Houses beyond repair, and for which closing orders have been served :—

Nos. 16 and 18, Hole House Fold, Romiley.
 Bardsley Hall Cottage, Greave Croft, Romiley.

BROMBOROUGH URBAN DISTRICT.—“There is adequate housing accommodation for the artisans and labourers in the district. Systematic inspections of houses under the 1909 Act have not been undertaken but will be commenced in the first quarter of 1912. The general impression conveyed to me by my inspections was that air space around the houses was ample and that a high standard of cleanliness of the surroundings was maintained. It is estimated that there are 260 houses under £16 rental. The number of persons per house at the recent Census was 4.8 as contrasted with 5.25 ten years ago. 9 New Houses were built during 1911.”

BUGLAWTON URBAN DISTRICT.—“Under the Housing and Town Planning Act, 9 houses were scheduled by the Medical Officer of Health, inspected and their condition reported to you, when you authorised the necessary notices to be served on the owners to have the defects found remedied.”

CHEADLE AND GATLEY URBAN DISTRICT.—“The inspections were begun at the end of October and it will take some time before all the houses assessed at £16 or under have been inspected, as there are 1,320 houses to be inspected. Ninety-eight houses situated in Brook Street, Queen Street, Old Road, Smith Street, Heath Square and Stockport Road, have been inspected. No

houses were considered to be in a state so dangerous or injurious to health as to be unfit for human habitation. No representations were made to the Authority with a view to the making of closing orders.

“No closing orders were made.

“Three dwelling-houses had defects remedied without making closing orders.

“No dwelling-house had defects made good after closing orders have been made.

“There were five back-to-back houses.

“The defects generally found to exist were of a very trivial kind.

“The houses on the whole were dry, commodious and well lighted and surrounded by plenty of open space.

“112 houses were built and occupied in the district during the year, as compared with 63 in the previous year. They have all complied with your Council’s Bye-Laws. The great increase is due mainly to the number of cottages built in Cheadle and also to the number of small villas and semi-detached houses in Cheadle Hulme South Ward. The houses were situated as follows :—

In Cheadle Ward	...	...	41 mostly cottages.
„ Gatley Ward	...	...	24 semi-detached houses.
„ Cheadle Hulme North Ward	...	10	villas & semi-detached houses.
„ Cheadle Hulme South Ward	...	37	Do.

Plans were passed for four new streets.

“In my previous annual reports I have had to remark on the want of suitable cottages for the working classes in the Cheadle Hulme Wards. During the year, owing to enquiries made by the Local Government Board as to what your Council were doing in the matter, your Council appointed a Sub-Committee to go into the matter and report. I have reason to believe that from the information I have recently received negotiations are now proceeding for the erection of a number of suitable cottages.”

COMPSTALL URBAN DISTRICT.—“The houses are substantially built and are of sufficient accommodation. No cases of overcrowding were reported during the year. There are a few

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back-to-back houses and one cellar dwelling. There are plenty of open spaces and the yards are, as a rule, commodious and kept clean and sanitary. No new houses have been erected."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"The large majority of the houses are artizans' dwellings. There is no question but that the number of houses is inadequate for the workers in your town. Bedrooms are occupied both night and day, and in some streets every house has lodgers in it. New streets are being laid out, and building is proceeding rapidly. There is plenty of open space, and speaking generally the surroundings of the houses are maintained in a cleanly condition.

"The number of new houses built in 1911 was 286. Your Surveyor exercises strict supervision over each stage of the erection of a new house.

"In a former report I mentioned the tendency of the town to grow in the form of long streets with houses of one uniform type or pattern. I wish again to advert to this, and to urge that in your Town Planning Scheme room may be found for the construction of dwellings with some claim to artistic merit, as illustrated in our own neighbourhood in Port Sunlight.

"In connection with various matters I have had occasion to visit a large number of dwelling houses during the year, and have had to draw attention to the almost uniform habit of the dwellers in Ellesmere Port of keeping their windows shut on bright sunny days."

HALE URBAN DISTRICT.—"Though the district is developing as a whole, the main development is taking place on the "Moss," where artizans' dwellings continue to be built. These readily let, but the internal needs of the district are to my mind amply met.

"There is no overcrowding in the district, and the houses are built with the maximum amount of air space around that can be enacted."

HANDFORTH URBAN DISTRICT.—"This is fairly good, though some of the newer houses are damp, and for a small district there are an unusual number of back-to-back houses. These houses do not seem to be more unhealthy than the others: that is to say there is no more sickness than in the non-back-to-back houses."

HOLLINGWORTH URBAN DISTRICT.—“Five new houses were erected last year, at the upper end of Market Street. 269 of the houses in the district are within the limits of rent in S. 14 of the Act of 1909.

“36 houses are back-to-back.

“In accordance with sub-section (1) of Section (17) of the Housing, Town Planning, etc., Act, 1909, the Inspector and myself made a list of the houses, the conditions of which appeared to be dangerous or injurious to health. Our report of the results of our inspection of the block first taken was presented to the Council on May 30th, 1911. As the outcome of that report, notices requiring the landlord to execute works were issued in the case of each house inspected. Numbers 25—39, Wednesough, are back-to-back houses, and were found to be in a very low habitable condition. Closing orders were subsequently served, and these houses are now empty.

No. 41, Wednesough, is a rather better-class house. This latter, and numbers 13-23, Wednesough, are single houses, built against more elevated ground. In this circumstance back doors could not be constructed without extensive excavation. Notices for repairs have also been served in respect to all these houses.”

HOOLE URBAN DISTRICT.—“The erection of new houses has been thoroughly supervised by the Council’s Surveyor. The house accommodation for the working classes is fully adequate for the needs of the district, the houses are well built with ample space between. At the census there were 1,224 inhabited houses, which with the population of the Workhouse included, gives an average of 4·8 persons per house or 4·3 excluding the Workhouse. Eight new houses were erected during the year by private enterprise, all of which complied with the bye-laws in force relating to new streets and buildings.

“No action has been taken under the Housing of the Working Classes Act.

“In connection with the Housing Inspection under the Housing and Town Planning Act, 1909, the Sanitary Inspector made inspections of 243 dwelling-houses. In 76 houses everything was found in order and the premises in good condition. Of the remaining 167 houses, informal notices were served for defects as shown below :—

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	Informal Notices served for defects.	Result of service of Notices.	
		Complied with.	Remaining in hand.
1. Closet Accommodation	2	2	—
2. Drainage	6	6	—
3. Condition of dwelling-house in regard to light, free circulation of air, dampness and cleanli- ness	21	7	14
4. Paving, Drainage and Sanitary Condition of yards and out- houses belonging to and occu- pied with dwelling-houses ...	149	96	53
5. Other minor defects	20	18	2
Totals	193	129	69

“In no case was any house found injurious to health, nor were closing orders necessary to be served. All the 69 defects remaining in hand are being dealt with by the owners.

“A special inspection was made of the back passages by a Committee appointed by the Council. Plans and estimates for paving being approved and no objections raised by the owners, the plans were submitted to the Local Government Board, and the Council now awaits their approval of the same.”

HOYLAKES AND WEST KIRBY URBAN DISTRICT.—“There is ample housing accommodation for the working classes. Modern well built cottages form by far the larger proportion of the artisan dwellings. Some few habitations in the older parts of Hoylake are not in accordance with present day requirements. These are in process of being dealt with under the Housing and Town Planning Act of 1909.

“The Surveyor and the Officials of his department supervise the erection of all new buildings, the occupation of which is forbidden, by a bye-law, until certified as fit for habitation.

“There is as a general rule ample open space provided about the cottages both at front and rear. Well paved passages, which

are readily kept clean, have been provided throughout the district. The commendable practice of constructing small houses in pairs instead of in long streets is gaining in popularity.

“The district has a number of Bungalows which are tenanted in the summer. The occupant of each makes annual application for permission to occupy and agrees to conform with stringent regulations which you have drawn up.”

KNUTSFORD URBAN DISTRICT.—“This is admittedly deficient. At the same time it is equally admitted that neither private nor public enterprise can provide cottages at a less rent than five shillings a week, unless a charge be made on the rates; and this rent is beyond the means of the persons in need of accommodation.

“In my last Report I mentioned an area containing 20 houses; two cottages in Gaskell Avenue; and two in Silkmill Street. The area was the subject of a L.G.B. enquiry on January 9th, 1912, of which the result is not yet known. This is a test-case; and recommendations to the council are suspended till “we know where we are.” A closing order was made as to one house in Silkmill Street (which practically dealt with both, as the two would have to be thrown together), but the owner appealed, and a L.G.B. enquiry was held on January 9th, 1912, of which the result is not yet known. [At the date of writing this Report it is announced that the Local Government Board have ratified the action of the Council in the case of this dwelling.] The two cottages in Gaskell Avenue were closed; and the owner has since submitted plans for rebuilding as one cottage; but he has not a foot of land except the exact area on which the building stands, and cannot therefore provide the necessary yard space—moreover two adjacent sides are almost entirely occupied by other contiguous buildings; and I cannot see how any new dwelling can ever be erected on this site under these circumstances.

“As soon as these old-standing problems are solved for us by higher authority, we shall no doubt be able to make better progress under the Housing and Town Planning Act and Regulations. At the same time I must point out that Mr. Marshall has so many other duties that the time he can devote to this item is necessarily limited.”

LYMM URBAN DISTRICT.—“During the year 1911 plans for 17 new houses were passed, as against 11 in 1910 and 6 in 1909. Eleven out of the 17 were cottages with 3 sleeping rooms. Plans of all new buildings must be submitted to and approved by the

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Council. There are in the district about 1,200 habitable houses, 1,177 is the census figure for separate occupiers. I estimate that about half of these fall within the limit of rental fixed in Section 15 of the Housing and Town Planning Act of 1909, namely £16 per annum. The Council have formed a Committee under this Act, and the Sanitary Inspector was appointed also inspector thereunder. A careful and systematic inspection of the houses in the district is being made, small houses in congested localities are being dealt with first; measurements of all the rooms are made, the size of windows and ventilation openings taken and detailed particulars of the sanitary conditions, water supply, drainage, etc., taken and recorded. During the year 153 houses have been inspected and 41 notices served. No closing orders have been made, but in almost all the houses inspected some improvements have been required. The chief sources of nuisance are badly paved yards, insanitary privies, want of proper ventilation and in a few cases want of cleanliness on the part of the occupiers. These matters are reported upon monthly to the Housing Committee of the Council. The combined privy and ashpit system is in use at practically all the houses of this class and in this is a fruitful source of nuisance either from faulty construction or by reason of the great carelessness of the tenants, who put wet and offensive matter into the ash-pits. I am strongly advising, in conjunction with the Inspector, the substitution of water closets and proper ashpits for the present privies. A circular has already been issued to property owners in the district advising such substitution when possible. This change will be made easier by the adoption of the Public Health Amendment Act of 1907, and also by the amendment of our bye-laws, matters which are at present under the consideration of the Council. The additional sewage scheme, now in hand, will also be of help in enabling us to generally substitute W.C.'s for privies. Fourteen cases of overcrowding in sleeping rooms have been investigated. Five have been put right and the others are "trying to get houses with three sleeping rooms," but until we have made a more extended inquiry throughout the district we shall not be in a position to estimate our actual shortage in such houses. In the meantime by transferring members of one family into other neighbouring dwellings and by getting rid of lodgers, we are attempting to lessen overcrowding in sleeping rooms. This is, in my opinion, a grave and common cause of phthisis, both directly and indirectly. Our low density of 1.1 person to the acre is, of course, no measure of overcrowding in individual houses. As my predecessor wrote: "He would like to see dwelling houses licensed to accommodate so many and no more," and I agree with him, for although an Englishman's house is, proverbially, his castle, surely it ought not

to be his coffin. The question of a bathroom in each house, or at least one to so many houses, is also one that is worthy of earnest consideration."

MARPLE URBAN DISTRICT.—The Surveyor reports as under :
 "The Council has now power (subject to the approval of the Local Government Board) to prepare a Town Plan, which when approved has the same effect as an Act of Parliament. This Act enables the Council to decide :—

1. The position, direction, and width of new streets.
2. The building line in new streets.
3. The class of house to be built in certain streets or areas
4. The position of works, factories, schools, public buildings, open spaces, and playing fields.
5. The number of houses to the acre.

"The above are a few of the additional powers given to Local Authorities, and are sufficient to show the importance and far-reaching effect of the Act ; in fact, Local Authorities are now able to design extensions to their town or village instead of as in the past being compelled to allow it to grow uncontrolled.

"The first point for the Council to decide is whether a Town Planning Scheme is necessary.

"In order to arrive at a satisfactory decision, it is necessary to investigate how the district has developed in recent years. This is not a difficult matter, and one is forced to admit that—

1. It is the general practice to crowd as many houses on a plot of land as is allowed by the Bye-laws.
2. That the bulk of the present buildings are situated on the old highways of the district, leaving the land between the highways undeveloped.

"These two points are to my mind sufficient to decide that a Town Plan is necessary ; and, further, I am of opinion that Marple is in a particularly suitable condition for the Town Planning Act to be applied with great success, my reasons being as follows :—

1. The bulk of the present houses are built on the old highways, and the land behind the houses is undeveloped ; and, if this land is left to speculative builders

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to develop, the result will probably be rows of houses crowded as close together as the Bye-laws will allow.

2. That a Town Plan should be prepared before large estates are broken up, as it is evident that it would be better to deal with one large owner than with several small owners.
3. That several of the present roads need widening, and this should be done before more buildings are erected or plots sold.
4. That at least one estate in this district has been surveyed and plotted out for houses with the minimum air space."

MIDDLEWICH URBAN DISTRICT.—"House accommodation is good and sufficient. The houses of the working classes are good structurally except in a few isolated instances where the defects are being remedied. Six houses closed as dangerous."

MOTTRAM URBAN DISTRICT.—"Under the Housing and Town Planning, Etc., Act, 1909, 46 houses have been inspected. Notices were sent out, and the necessary improvements ordered to be done. In most of the cases the improvements have been carried out, and in others they are waiting until the weather becomes more favourable. On the whole 90 per cent. of the property in your district is good, and the other 10 per cent. is receiving our attention. More houses containing three bedrooms could be built with great advantage, as it is rather an unsatisfactory state of things for young people of both sexes being obliged to sleep in the same bedroom, but the parents are unable to get more suitable houses.

"There are not many cases of overcrowding, and these, where discovered, are remedied. The open spaces at the back of some houses are used for keeping hens. I strongly advise the Council to prohibit the keeping of hens in close proximity to dwelling-houses. All houses in the course of erection, and when completed, are inspected by the Surveyor, and certified fit for habitation before being occupied."

NANTWICH URBAN DISTRICT.—The Inspector reports:—"The population of Nantwich, excluding the persons in the Workhouse and visitors at the Brine Baths Hotel, works out at 4.5 persons to each inhabited house.

In the 1,732 houses there are :—

	37	houses with 1 bedroom,
816	„	„ 2 bedrooms,
544	„	„ 3 „
335	„	„ 4 bedrooms and over.

“ During the past year 9 houses have been voluntarily closed by the owners on representations being made to them by the Medical Officer of Health and myself. Nos. 4, 6, 8 and 10, First Wood Street, were pulled down and three modern cottages were erected on the same sight. Nos. 1a and 2a, Second Wood Street, were also pulled down so as to give increased light and air space to two adjoining cottages ; and three old and dilapidated cottages with thatched roofs, Nos. 35, 39, and 41, Second Wood Street, have been closed. These houses are situated in what is known as the slum area in the town.”

NESTON AND PARKGATE URBAN DISTRICT.—“ The most important questions which have come up for discussion in your Council have turned upon the housing problem. It is admitted freely on all sides, that the district has dwellings which are unfit for human habitation. These dwellings command a very low rental, 2/6 a week in some instances is all that is asked for the tenancy. It ought not to be overlooked that some of the tenants would be unable to pay even this rent were it not that Poor Law relief supplements what they can acquire in other ways. If a man who is in receipt of outdoor relief has to exist in a hovel which is unfit for human habitation the problem presents itself as to whether that man should not be forced to take up his abode in the workhouse. 29 cottages have been dealt with, and the sole argument in favour of allowing them to exist has been that there are plenty of others like them and all should be treated alike. Your Council have been prepared to carry out the law, and have issued closing orders and demolition orders.

“ You have been faced with the difficulty that if you eject the people from these houses there are no vacant cottages to which they can go. You have been compelled to enter into a compromise whereby the people will not be turned out if they can show that they are attempting to get other cottages as vacancies arise. Ten cottages have been vacated and are awaiting the expiry of demolition orders. The analogy which your chairman has drawn between these Housing Inspections and Board of Trade Inspections of Ships and demolition of uninhabitable houses and breaking up of unseaworthy vessels is one which is bound to appeal to every thinking man.

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"The price of land is quoted by local builders as the reason why they cannot profitably build cottage property. Your Council have an offer for the acquisition of land on very reasonable terms and the purchase of this land may enable you to get over the difficulty of the non-existence of vacant dwellings. There is a sufficiency of open space around the more newly constructed houses, but many of the old cottages are closely packed in narrow "weints" without sufficient light or ventilation.

"At the 1901 census there were 795 houses in the district with an average of 5.2 persons per house, the houses have now increased to 935 whilst the average per house is 4.9 persons.

"There have been houses during the past year where overcrowding existed, but a timely warning has been sufficient to remove the nuisance."

NORTHWICH URBAN DISTRICT.—"During 1911 there have been five houses demolished owing to subsidence rendering them unfit for habitation. Twelve others have been condemned by the Medical Officer as unfit for habitation and await suppression.

"Although 42 new houses have been built they are mostly of a class rented above £15 per annum and do nothing to prevent the overcrowding in the cheaper cottages. The need for a cheap sanitary dwelling for the "pound a week man" is still acute, as it is almost everywhere. Thirty-five cases of overcrowding are reported by the Inspector, of these only the worst cases are dealt with: it is not Public Health to eliminate a large family from a small house when a larger one is only acquired by getting less food.

"Under the Housing and Town Planning Act, 181 houses have been inspected by both the Inspector and the Medical Officer. In the report of the Inspector a long list of defects is described as being found, and of these nearly all were remedied by moral suasion, and only 12 representations were made to the Sanitary Authority for 12 houses unfit for habitation. In respect of these two were remedied without closing orders being made and 10 have had closing orders issued.

"In no case was any defect remedied subsequent to a closing order being made.

"It is estimated that there are 3,500 houses within the limits of rent in Section 14 of 1909 Act.

“It was in respect of this class of house that the 10 notices were served for closure.

“There are no cellar dwellings in the district, but about 132 back-to-back houses, and in no case has the Sanitary Authority executed repairs.

“Of the defects found in houses as mentioned in the Inspector’s report, all are remedied except that the back-to-back houses remain, only one pair having been converted into a through house.

“The houses condemned as unfit for habitation are still in hand, also 6 of the defective drains; two of the houses having damp walls, and floors have been altered. The others remain in hand, as also do 7 of those of which the windows will not open.

“In considering the housing of the people it is well to bear in mind that people must have a house to live in, and that rent must be paid whatever else is gone without. Consequently it becomes necessary to get a clear and definite conception of what is required to house those people decently whose need is greatest; and as criminals, paupers, consumptives, lunatics and derelicts generally are provided with places of refuge, the people whose housing needs are the most acute are those who are trying to live on their own exertions, and fail to make more than 15/- to 25/- a week; and their numbers are very great. It is obvious that people with such a wage—and that uncertain—cannot pay more than 2/6 to 3/6 per week for rent, and as houses cannot be built under existing bye-laws for such a rent, it seems that the rearrangement of bye-laws to allow of a cheaper house might well be considered.

“In the present bye-laws, framed upon the model of the Local Government Board, it strikes one that there is a very great deal said about “walls” but nothing about “rooms,” whereas if rooms were carefully specified the construction of walls might be largely left to individual enterprise.

“It is as if a man with 15/- to purchase clothes were compelled to cover half his body with a 30/- suit, instead of getting a complete covering of a cheaper material.

“There are two fundamental requirements which cannot be too strongly urged: the first is that any cottage must be self contained, *i.e.*, be entirely enclosed with its own yard, sanitary conveniences, wash-house, coalhouse and larder; and the other is,

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that given these requirements, the number of living rooms is immaterial, and that even one good living room might make a healthy home for a young couple, an aged couple, or a widow with one or two small children; and further it would be much harder to overcrowd such a house than one built with three minute bedrooms of the present too common pattern.

"Such a house might be built cheaply, because even if the actual living rooms were of brickwork the offices might be of wood or iron.

"There is one condition which ought to be strictly enforced, and that is that where these small houses are allowed to be built, there should not be more than 20 to the acre.

"There are difficulties in the way of getting bye-laws framed with justice to present owners and yet demanding the increased requirements of room, but they should not prove insuperable, and in my report to the Rural District Council—which entirely surrounds this Urban District—I have made reference to these points.

"A plentiful supply of two or four-roomed cottages such as these would solve several of the social problems which are being tinkered with at the wrong end, and which will be only partly remedied at a much greater cost than the erection of such cottages.

"If the County were well supplied with cottages of this class (20 only to the acre) it would give ample room for children to play and develop in a healthy, natural manner, and is cheaper than providing parks and playgrounds which only the few who reside near them can use. It would put a much-needed check upon tubercular diseases, for sunshine and fresh air are the prevention and cure of this too-common scourge for which sanatoria are useless, or almost so.

"The gardens would provide a place where some such remunerative hobby as poultry keeping, bee keeping, pig keeping, etc., could be practised, and if a tenant of these dwellings came for parish relief and couldn't give a good reason why his garden did not possess a "hog" of potatoes, it would prove his "lack of energy" as efficiently as the most expensive labour colony which can be devised. These gardens would tend to keep down the consumption of alcohol which naturally follows the social attractions of the "Pub," to which a person is driven to escape from the environment of slums, and as alcohol is certainly one great factor in filling workhouses, prisons and

asylums, the tendency would be to lessen the numbers who require housing in those particular kind of houses.

“In conclusion, the decent housing of the people is without exception the greatest social need which requires reforming. It is a problem which in London has baffled all who have tried to remedy the indecent housing which exists there; and it can be done only in the small towns and villages of the country, and even if it needs a small subsidy from the rates, the money would be indirectly saved several times over.

“The Urban Council have appointed a Sub-Committee to consider and report on the need for working-class dwellings in the district.”

The Inspector adds:—“*Housing of the Working Classes Acts*.—I have inspected 181 houses and the following defects were found. Back to back houses 31, overcrowding 32, defective closets 25, filthy premises 10, defective drains 49, defective ash-pits 17, dilapidated property 15, defective yards 18, defective sinks 9, defective walls and floors 9, damp walls and floors 17, leaky roofs 10, defective spouts 14, defective pails 1, defective bedroom floors 11, windows that would not open 11, untrapped drains 3.

“The Housing and Town Planning Committee have appointed a special Sub-Committee to consider the erection of working class dwellings in the district, so that much needed accommodation may be provided for the low wage-earners in the district. The Sub-Committee have visited other districts and acquired much information. They have also had an interview with the Local Government Board and their report will be presented early in the year 1912. I have instructions to get all improvements I can to property which is not likely to be condemned pending the decision as to the erection of houses, but the Council are withholding any action as to closing of further houses at present owing to the displacement of tenants who would be unable to find other accommodation.”

RUNCORN URBAN DISTRICT.—“House accommodation appears to be adequate to the demand, and it seems that houses are now fairly well let; no complaint has reached me about a shortage. New houses are being added to the number, old ones are being transformed into decent dwellings, and in time no doubt this must tell on the health of the community.”

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SALE URBAN DISTRICT.—“357 dwellings were thoroughly inspected, some minor defects were discovered, and the small terrace of houses in Cross Street was condemned as unfit for human habitation. These were subsequently rebuilt in great part and made habitable.

“*Overcrowding.* Three instances were dealt with.

“*Workmen's Dwellings.* There was an adequate supply of these and their sanitary condition was satisfactory.

“*Housing of the Working Classes Acts.* No action was required to be taken by the Council under these Acts. Any lack of cleanliness in the houses inspected has been pointed out to the occupants and the importance of proper ventilation insisted upon.”

SANDBACH URBAN DISTRICT.—“The houses of the working classes have rather a strain on them at present. The visited houses are in a good state of repair, have plenty of air space and are in a sanitary condition. 7 New houses have been erected during the year.

“The house to house inspection, which was commenced in 1909, has been superseded during the year by the more complete inspection which has been commenced under the Housing (Inspection of District) Regulations, 1910. A good number of minor nuisances were found under the original house to house inspection at the beginning of the year and the necessary steps were taken to abate same. One house (No. 93, Union Street), was also closed by the owners as a result of this inspection.

“Under the 1910 Regulations, the following work has been done. In February the Inspector of Nuisances prepared a list of the streets containing the dwelling-houses which he considered should be first inspected. This list was approved by the Council and the inspection of the houses in these streets is now almost completed. The records are kept in a separate book and embrace all the headings mentioned in Articles 2 and 3 of the Regulations. The records are also considered at the Monthly Meeting of the Sanitary Committee, and a Monthly Report (containing a list of defects found under the inspection) is placed before this Committee by the Inspector. In connection with this inspection, three houses in Hawk Street have been condemned and one of these has been closed and demolished and the other two are being placed in habitable repair. Numerous minor defects have also been reported each month and the necessary steps have been

taken to secure the remedy of them. Much improvement has thus been effected in the ashpit and closet accommodation."

TARPORLEY URBAN DISTRICT.—"There has only been one new house built during the year. The number of dwelling-houses inspected under Section 17 Act of 1909, were:—Tarporley, 88; Eaton, 21; Rushton, 18; Utkinton, 24; total inspected, 157. One house was considered unfit for habitation and closed. There were 63 representations made to the Local Authority; no closing orders were made. There were 63 houses where defects were remedied or are in process of being remedied. The number of houses estimated or ascertained within the limits of rent in Section 14 of Act of 1909 were 515 at £16 and under and 335 at £8 and under. One cottage was closed without the statutory notice. There are no back-to-back houses in the district and no cellar dwellings."

WILMSLOW URBAN DISTRICT.—"Fifteen new houses were built during 1911. None of these were workmen's dwellings. So few cottages have been built of late years that complaints have arisen of there not being enough to supply the demand. There is no doubt that this is the case to some extent, though there is no evidence of overcrowding, nor are there many people working in the district and living outside owing to lack of accommodation.

"There is a sufficiency of open space about houses and the surroundings are clean.

"There is supervision over the erection of new houses.

"There are no back-to-back houses, and no cellar dwellings.

"Nineteen dwelling houses were inspected under and for the purposes of Section 17 of the Act of 1909.

"Six were considered to be unfit for habitation.

"Six representations were made to the Council with a view to the making of closing orders.

"Five closing orders were made.

"Eleven cases where the defects were remedied without the making of closing orders.

"Three cases still under consideration at the end of the year.

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“General character of defects found to exist :—

- (1) Deficiency of ventilation.
- (2) Deficiency of air space.
- (3) Dampness.”

WINSFORD URBAN DISTRICT.—“At the beginning of February, 1912, it was reported that there was not a vacant house in Wharton, and only eleven in Over (mostly large houses). It also appears that not a single set of plans for a dwelling house has been submitted to the Council for something like eighteen months. There is therefore a definite shortage of houses for the working classes. But the problem is more complicated. The shortage exists to day, because of an improvement in trade. Eighteen months ago there were numerous houses empty, and it will probably be the same in the future.

“During the year 75 houses in various parts of the District have been inspected by the M.O.H. and Inspector. 55 were dealt with under Sect. 17 of the H.T.P. Act, 1909, and their condition carefully entered up in a special Register. Separate notices have been served for all houses where defects were found. In the case of 33 houses (mostly in Princess Street) repairs are completed; and in most of the remainder are in progress. The improvements include conversion of privy-middens to peat-pails or water-closets; fixing slopstones with waste-pipes; provision of better ash-pits, or sanitary ash-bins; paving of yards and passages; repairs to drains and gullies; repairs to walls, roofs, gutters and rain-pipes. Numerous visits, inspections, and interviews, beyond those tabulated, have been made both by the M.O.H. and the Inspector.’

“In connection with this work, the Council, at my request, appointed a small special Health Committee; which (early in 1912) has been elevated into a Standing Committee, comprising all the members of the Council, with an independent time of meeting. This Committee already has under consideration the revision of the byelaws, the adoption of parts of the P.H.A.A. Act, 1907, etc.; and it ought at least to be recognised as a proof of a genuine desire on the part of the Council to repair and strengthen their administrative machinery. It marks also a long step in advance, since my last Report.”

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—“Every house in the district has been inspected and comparatively few defects were found. There are no “back-to-back” houses in the district. It

has not been necessary to take action under the Act, as all defects were put right as the result of informal notices.

"Number of houses inspected	...	...	409
Number of houses unfit for human habitation			0
Number of Closing Orders made	...	...	0
Number of houses in which defects were remedied without making Closing Orders			25

"The actual defects which were found to exist were as follows :—

Defective ashpits	...	...	...	11
Defective drains	...	...	...	8
Defective W.C's	...	...	...	1
Defective gullies	...	...	...	5
Five new houses have been erected during the year."				

BUCKLOW RURAL DISTRICT.—"In our only case, a block of three cottages, the defects were such as were due to venerable age, general dilapidation, dampness, defective drainage, &c.

"As regards the details in the Memorandum, (1) the accommodation especially for the working classes, is adequate; and the houses are in good condition and repair. The latter is the result of many years' attention and work by myself and my Inspectors, and our predecessors. This has always been a District where Byelaws have been enforced. As to "adequacy" I am fully aware that if some Genic provided 500 new cottages to-morrow they would all be occupied within a week. But it would not be by our resident population. It would be by persons from Manchester (and other towns), and it would therefore not affect the condition of present residents at all. Northenden and Timperley are the places where more houses are wanted, but it is a demand coming from outside, for purposes of immigration; and I do not myself consider that any duty rests upon the Council to meet such a demand. (2) Open space may in many parts be measured in acres. There is only 0·4 person to the acre; or $2\frac{1}{2}$ acres to every person. The villages are small, and with very minor exceptions, there is always open space, and the surroundings are more or less clean. I do not mean that they are all ideal, but that they never approach "slum" conditions. (3) Supervision over erection of new houses is close, and no occupation is permitted until everything is satisfactory. (4) No action was taken, or needed, under Parts I., II., or III. of the H.W.C. Act.

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"The question of overcrowding remains. It will be gathered from previous pages that overcrowding is not inherently probable in the 11 townships whose population has decreased in the decade, nor in the 12 townships whose increase is less than 100 each. The remaining 7 include 2 where the increase is due to public institutions, and the remaining 5 are just those where building is most active. No cases of overcrowding have needed any action in 1911."

"Turning now to the H.T.P. Act and the Regulations, I submit Mr. Metcalfe's Report. I believe the work has been thoroughly, conscientiously and well done. I am however bound to point out that it has not been done 'under my direction and supervision' as specifically required by Art. II. and Art. III. of the Regulations. Mr. Metcalfe has done the work as if he were an entirely independent Officer. Considering the length of time it takes to inspect a house, and the time in writing up the Register, and in writing reports, and perhaps notices also, together with numerous re-inspections and supervision of improvements, I consider that 111 houses, completely reported on, are a quite satisfactory instalment of this particular work for one year. Simple rule-of-three however points out that it will take 45 years to cover the District at the same rate.

"*Inspector's Report.*—Inspection was commenced at the beginning of 1911, and my work as Inspector has been very greatly increased by this new department. 111 houses were inspected, registered and reported on. The general defects were bad floors, dampness, want of ventilation, defective drainage and insanitary privies. In one case only an order had to be issued to procure admission. Closing Orders were made for one block of three cottages in Timperley. No demolition orders have as yet been asked for."

CHESTER RURAL DISTRICT.—"The number of new houses built during 1911 is 44. The number of dwelling-houses inspected under Section 17, Act of 1909, 23. The number of such houses considered unfit for habitation, none. There were no representations made to the Local Authority, and no orders were made by the Local Authority. There were 15 houses where defects were found. These are receiving attention, and if not remedied, legal notices will be sent.

"The estimated number of houses within the limits of rent in S. 14 of Act of 1909, is 1,571. Notices were served to 15 of such houses in 1911. No houses were closed after notice.

“There are no houses where the Local Authority has executed the necessary repairs. There are no back-to-back houses in your district, and there are no cellar dwellings in your district.”

CONGLETON RURAL DISTRICT.—“This year we have made a beginning of the regular and systematic Inspection and Record of Housing Accommodation under the Housing and Town Planning Act. 75 houses have been inspected, and 7 were not considered fit for habitation, 3 were closed without serving Closing Orders, and 4 owners were served with Closing Orders; these are now pending. 5 houses need repairs to make them habitable; these were done. Holmes Chapel and Moston are short of houses.”

DISLEY RURAL DISTRICT.—The following is a summary by the Inspector of work done:—“Twenty-six new houses were built during 1911. Nine dwelling-houses were inspected under Section 17, Act of 1909. No houses were considered unfit for habitation. There was one case where the defects were remedied without a Closing Order being made. There are six back-to-back houses in the district and no cellar dwellings.

“The reason that so few houses have been inspected under the Housing and Town Planning Act is that the Sanitary Inspector did not receive any orders from the Council to move in the matter till late in the year, and then he was so affected with cataract as to be unable to carry out the work. I would advise that some other capable person be appointed to carry out the work.”

MALPAS RURAL DISTRICT.—“No dwelling-houses have as yet been inspected under S. 17, Act of 1909, owing to our not having had a Nuisance Inspector.

“The estimated number of houses within limits of rent in S. 14 of Act of 1909 is about 870.

“There are no back-to-back houses in your district, and no cellar dwellings.”

NANTWICH RURAL DISTRICT.—“The Inspector of Nuisances is the officer appointed by the Council to make the inspections under the Housing and Town Planning Act. A tabular statement of the action taken under the Act is given in his report, which is annexed.

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“The housing conditions in this Rural District are generally fairly good. Very great improvements have been made in the past few years on one of the largest estates. The cottages are built in pairs, and consist of a large living room, scullery and pantry downstairs, with three good bedrooms, each with an independent entrance, upstairs. Each cottage has a good garden.

“If only a sufficiency of cottages of this class were provided, at a reasonable rent, I am of opinion that the problem of rural depopulation would be in a fair way for solution.

The Inspector adds:—“Sixty-eight plans for new buildings were passed by the Council during 1911, and were as follows:—

New houses	...	...	...	20
New Outbuildings	...	...	...	33
Alterations and Additions	...	...	...	12
Schools and Public Buildings	...	...	...	3
				<hr/>
				68
				<hr/>

“This makes a total of 3,077 new buildings sanctioned by this Council since 1875, when these Urban powers were first obtained; the buildings being erected in the townships as follows:—

Audlem ...	...	...	...	164
Shavington	...	...	...	317
Bunbury	...	...	...	112
Willaston	...	...	...	390
Haslington	...	...	...	422
Church Coppenhall	...	...	...	706
Other Townships	...	...	...	966
				<hr/>
				3,077
				<hr/>

“The following table summarises the action which has been taken under Section 17 of this Act and the results which have followed.

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TOWNSHIP.	Con- demned.	Formal or Informal Notices served.	Improve- ments in conse- quence.	Houses Closed.	Re- opened after improve- ment.	Houses pulled down.	Back to back Houses.
Baddiley ...	3	3	2	...	...	...	...
Burland ...	1	1	In hand	...	...	...	...
Chorley ...	2	2	2	...	...	...	...
Coppenhall ...	4	4	4	...	...	...	...
Edleston ...	1	1	1	...	...	...	...
Haslington ...	9	9	7	...	...	2	...
Hough ...	1	1	1	...	...	...	...
Poole ...	1	1	1	...	...	...	...
Willaston ...	7	7	7	...	...	...	...
Worleston ...	5	5	5	...	...	...	...
	34	34	30	...	...	2	...

“The houses inspected contain the following number of rooms :—

No. of Houses.	Ground Floor.	First Floor.	Atties.
9	1 & Pantry, etc.	1	...
67	1 ”	2	...
7	1 ”	3	...
1	1 ”	4	...
27	2 ”	2	...
52	2 ”	3	...
4	2 ”	4	...
1	2 ”	5	...
6	3 ”	4	...
1	3 ”	5	...
1	4 ”	3	...
2	4 ”	6	...

Total houses, 178.

Number of cottages pulled down, 6. Built in lieu thereof, 4.
Closed by owner, 2. Burnt down, 1.

“Bedrooms have been built over sculleries belonging to fifteen cottages for the purpose of providing more sleeping-room accommodation. The total number of houses of which a thorough sanitary survey has been made in the District is 2,159. The dwelling houses in the more congested parts of your District are inspected at least once in the year. All structural improvements and alterations are noted and journalized.”

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NORTHWICH RURAL DISTRICT.—“During the year 34 new houses have been built and 416 have been inspected.

“Nine houses have been condemned as unfit for habitation and have now been made habitable. On representation to the Local Authority 3 closing orders were issued by them, 6 houses being remedied of their defects without Closing Orders being needed.

“There are about 4,327 houses within the rent limit of Section 14 of Act of 1909.

“There are no cellar dwellings and only 4 back-to-back houses in the district. The details of inspection and their results are set forth in full in the report of the Inspector.

“There is a shortage of *cheap* cottages in this district and in places overcrowding occurs which it is almost impossible to deal with. An instance of the hardships inflicted by dealing with these cases occurred during the year. A family of 9 children with father and mother were living in a cottage with 2 rooms up and 2 down, which was not in a good habitable condition. The Medical Officer of Health reported the overcrowding and an order for abatement was made.

“The man, whose wages were those of a chemical labourer, had to get another house *within his means* at very short notice; at the end of the time he had not got a house and was in great distress; the time was extended but the law had to be fulfilled and eventually the house was vacated. Where they went I have never enquired for the simple reason that it seems morally certain that with a family of 9 to keep the amount expended in rent won't purchase a cottage any, if at all, larger than the one they left; and to repeat the process would be neither creditable, humane or hygienic.

“What is wanted in this district is a cheap dwelling, and I should suggest something after this fashion if bye-laws can be got to permit of it. Each cottage must stand in its own enclosed area and have scullery, larder, coal house and w.c. of specified dimensions, and these might be built of wood or iron.

“If a cottage occupies one-fifteenth of an acre of land it might be allowed to have one living room and one bedroom, of not less than 14 × 14 feet with height and window space rigidly specified,

also fireplace in bedroom. If only two of these were upon an acre of ground they might be entirely of wood.

“The distance from the centre of the street to the front wall to be 30 feet, and the frontage to each house to be specified, so that when built in pairs there would be 20 feet between each block.

“Where three or four-roomed houses, *i.e.*, two rooms down and two up, or one large living room with two bedrooms in addition to the necessary sanitary accommodation already specified, they might be allowed in pairs if each had one-twentieth of an acre of land for its own enclosure.

“Such houses as these would accommodate a very large number of families without any overcrowding at all, and would make decent “homes” which would be thoroughly and gratefully appreciated by hundreds of working men in these districts.

“The streets might be left 36 feet wide, but only the middle made 10 or 12 feet wide with a belt of grass on either side, which could be taken up and made by the Sanitary Authority when required for through traffic.

“Such cottages could I believe be built in the more rural districts, and could be let cheaply, and it ought not to be past the wit of man to devise bye laws allowing such structures with considerable latitude as to materials, and yet assure them being weather proof, dry and sanitary.

Mr. Bennett, the Sanitary Inspector, adds the following :—
“The work under the Housing and Town Planning Act and the Housing (Inspection of District) Regulations has been slow, owing to the inspections being made for record purposes, but good work has been done as far as the inspections have gone. Closing orders have been issued by the Council under Section 17 of the Housing and Town Planning Act with respect to 3 houses, 2 of which became operative, notice being served on the tenants to that effect. The owners falling in with the Council’s desire executed the required repairs to the satisfaction of the Council, who, on the report of the Inspector to that effect, determined the orders in accordance with the Act. Seven other houses were certified by the Medical Officer of Health as unfit for human habitation, but on notice from the Clerk that the Council intended issuing closing orders in respect to these houses, the owner at once promised to meet the Council’s requirement and the orders

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were not issued, the work being in progress at the close of the year. New out-buildings including washhouses, coalhouses and improved closet accommodation have been provided with new drainage, and also general repairs to 9 houses after a personal interview with the different owners. Fifty houses situate at Lostock Green were found to have no proper system of drainage, and as it was not practicable for the many individual owners to deal with the sewage within their respective curtilage, the Council have given instructions for plans to be prepared for a proper system of sewerage with sewage disposal works for their consideration and approval. This necessarily delays the improvements required to premises in respect to 40 of the houses.

"I had also to report 172 houses situate in the township of Lostock Gralam which were rendered insanitary owing to the ten private streets including back passages, and the Council have issued the necessary instructions for application to be made to the Local Government Board for urban powers under the Private Street Works Act in respect to these streets, and that further powers be applied for with respect to 14 other private streets including back passages in seven other villages in the district where similar insanitary conditions exist affecting 376 houses. The drainage was also found defective at 15 houses in Plumb's Fold, Barnton, and the Council at once ordered the abandonment of the old sewer and a new sewer to be laid. This was done and the owners are to be called upon to complete the improvements necessary to put the several premises in a sanitary condition.

"Inspections have been made of 416 houses under £16 rental since I was appointed Inspector under the housing clauses of the Housing and Town Planning Act in July, and are being dealt with at the close of the year, the delay being caused by the great amount of clerical work in making up the many registers required to make permanent records, but as this work is now well in hand I hope to make much progress in the new year.

"I have been called upon by the Council to make a report as to the housing accommodation in the whole of the Rural District, chiefly as to the reported need of suitable houses for the working classes within the district. This I prepared, based chiefly on the general knowledge of the district I had acquired during the 18 years' service as Assistant and then Chief Inspector, and also a general inspection of every township. This report I submitted to a Committee appointed by the Council to consider the

whole question in November last and they now have the matter under consideration."

RUNCORN RURAL DISTRICT.—Dr. J. Adams reports—"Under the provisions of the said Act, your District Council elected a very strong and able Committee, together with your sanitary officers, and they have made personal inspection of about 329 premises during the last year, situate in the more densely populated parishes in your district, viz., Helsby, Frodsham, Frodsham Lordship, Halton and Weston; out of this selection of premises, the cases known by your sanitary officials to be those requiring the earliest attention under the Act, were naturally undertaken first. An equally praiseworthy activity on the part of the Council, will, I feel sure, be supplied during the coming year."

TARVIN RURAL DISTRICT.—"The number of new houses built during 1911 is 13 in the north division, and 2 in the south division. The number of dwelling-houses inspected under S. 17, Act of 1909, is 85. The number of such houses considered unfit for habitation is four.

The number of representations made to the Local Authority	...	59
„ „ closing orders made by „ „ „	...	0
„ „ defects remedied without closing orders	...	53
„ „ „ „ after „ „	...	0

"Estimated number of houses within limits of rent in S. 14 of Act of 1909, about 1,750.

"The number of such houses in respect of which notice was served during 1911—five.

"The number of such houses closed after notice—none.

"The number of such houses where Local Authority has executed necessary repair—none.

There are no back-to-back houses in the district, and no cellar dwellings."

TINTWISTLE RURAL DISTRICT.—"Under the Housing and Town Planning Act eight houses have been inspected, and statutory notices were sent out regarding the property. One notice has been complied with.

"The number of houses for the workpeople in the district seems sufficient. There is not much overcrowding, and when

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discovered has been remedied. On the whole the houses are kept very clean. What is wanted are more houses with three bedrooms, as it is rather an unsatisfactory state of things for young people of both sexes being obliged to sleep in the same bedroom, but parents are unable to get more suitable houses. All houses in the course of erection, and when completed, are inspected by the surveyor and certified fit for habitation before being occupied."

WIRRAL RURAL DISTRICT.—Dr. Yeoman reports as follows :—
 "So far as my observations go there are practically no unoccupied cottages in the Rural District. Very many of the houses for the working classes are modern and well built, with plenty of air space and garden ground. A demand for more cottages exists, but cannot be met owing to the prohibitive cost of land in Wirral. Here and there, more especially in the older villages, cottages exist which are below the standard of present day requirements. I have had these cottages under review, but in almost every instance there is plenty of through ventilation, a good water supply, and complete isolation from surrounding houses, so that I have considered it preferable to deal under the Housing Regulations with cottages in the larger centres of population first of all. Your Council have now appointed, on my recommendation, some of its members to act as a Housing and Public Health Committee, and this will greatly facilitate the progress of the discussion of representations in relation to property, which were apt to be crowded out by the multiplicity of other business in the Council Meetings.

"There have been no cases of overcrowding; the average number of persons per house which was 5.53 at the 1901 Census, was only 4.8 at the present one. In the ten years elapsing between the two official numberings the number of inhabited houses has risen from 2,533 to 3,836. The supervision over the erection of new houses is in the hands of your Surveyor, who examines the plans of all new buildings and also inspects them to see that they comply with your bye-laws. As you are aware a scheme has been proposed for the building of a garden city of good class houses in Thurstaston. A recent change in the ownership of a large amount of land in the central part of your district is likely to have far reaching consequences on its future developments. The new owner has publicly announced that he will commence at an early date to construct a road of the uniform width of 120 feet through the estate which he has acquired. This road will connect two existing roads and form a new means of access to Birkenhead.

HOUSING—DAIRIES, COWSHEDS AND MILKSHOPS.

Town Planning Schemes are in process of being formulated by neighbouring authorities, which may affect you both directly and indirectly.

The following are some statistics on this question :—

Number of new houses built during 1911	...	...	124
Number of dwelling houses inspected under s. 17			
Act of 1900	...	...	24
Number of such houses considered unfit for habitation			13
Number of representations made to Local Authority	...		24
Number of closing orders made by Local Authority	...		0
Number of houses where defects remedied without closing orders being made	...	...	24

Section X.—Miscellaneous.

Dairies, Cowsheds, and Milkshops.

I have personally visited a considerable number of farms during the year in connection with the discovery of tuberculous milk by the Corporations of Manchester, Liverpool and Warrington and by the London County Council. Your Committee has had full details of the conditions discovered on these inspections submitted and the practice of sending on any of my recommendations to the Councils concerned and asking for a report of the action taken has proved distinctly useful. The Medical Officers of Health and Inspectors are unanimous in stating that these reports and recommendations are most helpful to them when the matter is being discussed by the Council.

I append extracts from the various reports on this matter.

CONGLETON MUNICIPAL BOROUGH.—“Under the Dairies, Cow Sheds and Milk-Shops Order, 93 registered premises were inspected, and there were not any defects discovered.

“The Chief Constable, who also acts as Inspector under the Food and Drugs and Common Lodging Houses Acts, reports that 36 samples were sent for analysis ; that 35 were certified to be pure

DAIRIES, COWSHEDS AND MILKSHOPS.

and 1, a sample of milk, was found to contain 2 per cent. of water, but on the recommendation of the analyst no action was taken as in his opinion the milk was from poor cows, and it was ascertained the cows had been poorly fed, and the milk on examination later was found to be pure."

CREWE MUNICIPAL BOROUGH.—"There are 74 premises on the Register where a retail trade is carried on in milk. This is a decrease of 19 from 1910. Many of these shops are quite unsuited for the sale of milk, as they lack proper storing room. They are usually small premises where greengrocery, &c., is sold, and the milk is, in most cases, kept in an earthenware or tin vessel on the counter or adjoining shelf.

"The combination of milk selling with other business in a small shop is not desirable in the health interests of the public.

"The following additional regulation prescribing precautions to be taken by purveyors of milk and persons selling milk by retail in the Borough, against infection or contamination, came into force on August 1st 1906 :

"Every purveyor of milk or person selling milk by retail shall
 "cause every vessel containing milk for sale to be kept
 "properly covered, or to be otherwise sufficiently protected
 "from contamination by dust or flies."

"There are still a few retailers who have not provided covers for the milk, and it is to be feared many others do not use the covers as they should do.

"There are 45 cowsheds in the Borough, which are frequently inspected. Insufficient ventilation in some of the premises and unnecessary delay in carrying out the daily cleansing have been found. Greater attention to the cleanliness of the animals, suitable grooming and regular washing of the udders before milking, would all tend to a cleaner milk supply.

"Further legislation is required to deal adequately with the milk supply of the community and to ensure an infant food which will not be a vehicle to convey the tubercle bacillus from the cow to the child."

WALLASEY MUNICIPAL BOROUGH.—"Samples of milk have been taken for bacteriological examination in 20 cases during the year. None of these were found to be tubercular. Where,

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however, an excessive number of micro-organisms were found, special inspections of the milk-dealers' premises were made and requests made to the County Medical Officer of Health for a similar inspection at the sources of the milk supply, with the object of discovering how the milk probably became contaminated in each instance, so that steps might be taken to prevent such contamination in the future."

LOWER BEBINGTON URBAN DISTRICT.—"Milk is imported from the neighbouring rural area as well as supplied by cowkeepers in the district. Some milk vendors did not appear to me nearly careful enough with regard to the general cleanliness of the milk, large open vessels of milk being allowed to stand uncovered on the shop counters, and open for the reception of dust and flies. The suggestion that the milk vessels ought to be kept covered was in some instances obviously regarded as an unwarrantable interference. One milkman was imbued with the idea that covering the milk vessels would be bad for the contents. Education of the people to reject milk which contains dust, dirt, and foreign material is required, otherwise milk dealers would not be able to sell milk which has been exposed for hours to the dust and dirt of the streets. The cowsheds in one instance are crowded in a small yard in the middle of the town, and both lighting and ventilation are deficient. Their long establishment seemed to be the argument for leaving them as they are, and it may be said in their favour that the cows are never long in them."

CHEADLE AND GATLEY URBAN DISTRICT.—"In 1903 your Inspector drew up a very full report on the number of cowsheds, the lighting and ventilation, and the cubic space per cow in the district. It will be seen from the report that a large number of them required alterations and improvements which have since been made in most cases.

"In December, 1907, he was instructed to draw up another report on the lighting and the number of cows in each cowshed, and in September, 1909, he made a third report on the same subject. On comparing the three reports it will be seen that there has been a great improvement both in the lighting, ventilation, and the cubic space allowed each cow. At the end of the year 1910 there was not a cowshed in the district in which there was under 400 cubic feet per cow, and in the majority of cases over 600 cubic feet, and in some cases over 1,000 cubic feet per cow. The subjoined table shows what a great improvement there has been.

DAIRIES, COWSHEDS AND MILKSHOPS.

“Cowsheds in district and the cubic space per cow as shewn by special reports made in 1904 and 1909 :—

1904.				1909.			
<i>Under</i> 400	400-500	500-600	<i>Over</i> 600	<i>Under</i> 400	400-500	500-600	<i>Over</i> 600
12	14	13	35	3	14	32	40

At close of Year 1910.

<i>Under</i> 400	400-500	500-600	<i>Over</i> 600
—	14	24	41

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“My visits of inspection convinced me that many of the cowsheds are not up to the standard of modern requirements in structure, lighting and ventilation. Lime-washing, as a rule, is done with regularity ; but as the cowsheds are in the possession of tenants, they do not see their way to undertake alteration in their landlords’ property. In some instances the shippens are mere wooden sheds which, although erected for temporary purposes, have been allowed to persist. It has to be remembered that for the greater part of the year the shippens are empty, and it can be said for the rickety wooden buildings that they are well ventilated.”

CHESTER RURAL DISTRICT.—“Statistics show that milk produced in the county contains a greater percentage of bacilli than milk produced in a town such as Liverpool ; this, with our perfect pastures and fresh air, ought not to be. The bacillus tuberculosis found in milk indicates that the animals from which the milk was taken were tubercular, or that the pails into which the milk was received, or the milkers’ hands were infected from previous contact with a diseased cow or person ; this, as one can readily see, may infect the teats of the other healthy animals. Milk producers have already shown a willingness to be advised as to the best methods of keeping their cattle and cowsheds in the most healthy and sanitary conditions, and I hope that any milk producer wanting advice on the subject will not hesitate to ask, as I will be pleased to offer any advice that I can.

DAIRIES, COWSHEDS AND MILKSHOPS.

“The district is very fortunate in having such a fine river as the Dee, with its numerous brooks which are never dry, and add greatly to the quality of the pastures and the health of the cattle.”

NANTWICH RURAL DISTRICT.—“The number of cowkeepers and milksellers on the register at the end of 1910 was 256 ; the number at present is 372, showing an increase of 116. The cowkeepers dispose of their milk as follows :—

1	sends to	Alsager.
1	„	Hanley.
1	„	Llandudno.
1	„	Silverdale.
1	„	St. Helens.
1	„	Sandbach Factory.
27	send to	Audlem Creamery.
65	„	Crewe.
6	„	Godley.
10	„	London.
43	„	Liverpool.
20	„	Manchester.
36	„	Middlewich Factory.
10	„	Nantwich.
2	„	Pipe Gate.
2	„	Stockport,
75	„	Wrenbury Factory.
70	dispose of	their milk locally.
<hr/>		
Total	372	
<hr/>		

“In some instances the milk is sent away at the week end only as accommodation milk. A considerable number of cowkeepers sell their milk in the winter months and use it for making cheese in the summer months. The following figures indicate that immense improvements have been made in the sanitary conditions of the cowsheds in your district. One hundred and seventy-three windows have been put in forty-four cowsheds, thirty-two floors have been re-paved with Staffordshire blue bricks, laid on a six inch bed of concrete, and the joints grouted with cement, or with concrete and the surface finished with cement and grooved, so as to prevent the cows from slipping. I have stated in a previous

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report that floors laid with a three inch thickness of Portland cement mixed with crushed granite, one part Portland cement to two parts crushed granite, laid *in situ* on a six inch bed of concrete, is in my opinion the best and most sanitary paving for cowsheds. As it is homogeneous the absence of joints offers no entry for liquids. The drains of thirty cowsheds have been either partly or entirely re-laid. In eight cowsheds the stalls have been re-arranged, new floors laid, windows put in, salt glazed feeding troughs fixed and new drainage systems provided; thirteen cowsheds have been built on private estates. Six new cowsheds, dairies, etc., have been built at Batherton by the Cheshire County Council and three cowsheds altered to meet the requirements of five small holdings. One new cowshed, dairy, etc., has been built at Baddiley and one large cowshed altered to meet the needs of two small holdings. The whole of these cowsheds, dairies, etc., meet every sanitary requirement. Over one thousand visits were paid to registered cowsheds, etc. I found on inspecting them that the walls had been limewashed in accordance with the regulations. Several cowkeepers limewash the walls of their shippens three times in the year."

RUNCORN RURAL DISTRICT.—Dr. J. Adams reports:—"In your district there are about 205 persons registered for the sale of milk, of which the large majority control 'Cowsheds' under the 'Dairies' etc., Order of 1885, and from which milk is forwarded to industrial centres. In almost all these cases the milk is dealt with entirely outside the dwelling houses, and, as far as is practicable, by persons who do not reside on the premises. In the event of infectious diseases occurring on the premises, the further sale of milk is (1) either prohibited during the presence of disease on the premises, or (2) is dealt with in accordance with local regulations made by your Council, under the Dairies, Cowsheds and Milkshops Order of 1885. These regulations are strictly enforced within your district.

"In reference to the sale of milk to outside communities, your district has occasionally been invaded by officials from other Corporate bodies, mainly in reference to tuberculosis in milk or in milking stock. These invasions have generally been made without a strict compliance with the regulations dealing with such powers of inspection on the part of any corporate body to invade and inspect the area or farm stock of another corporate body, without the necessary order having been obtained of, or from, a Justice of the Peace, resident in any portion of the district proposed to be so inspected. I feel quite sure that this

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point may have been overlooked, and that, on proper representation being made, a stricter compliance may easily be attained, and, thereby, a considerable amount of totally unnecessary friction might thus be easily eliminated. I would suggest that such further enquiries should be carried out *only* after due notification of the purpose of such inspection having been made, either to— (a) the District Medical Officer of Health, or (b) the Inspector under the Dairies and Cowsheds Order of 1885.

“If these official courtesies were observed, I am quite sure that, in the majority of cases, the Justices’ Order could be dispensed with.

“I desire to observe that a large proportion of farmers and milk sellers within your district are fairly well acquainted with the nature of tuberculosis as affecting their occupation as milk sellers, and also, as affecting the health of the community; and, from my personal knowledge of a large number of them, I am convinced that they will join in any broadly conceived scheme for the stamping out of tuberculosis, alike in cattle and in man; but,—they wait for an indication that the State will recognise their sympathetic attitude, and that after due consideration, the State will deal with the tuberculous milking cow, as they formerly dealt with ‘pleuro-pneumonia,’ that is to say, on a basis of proportional, or total compensation;—or some other State-devised scheme of insurance against tuberculosis, devised alike on behalf of the public health and the providers of their milk supplies.”

In the WIRRAL RURAL DISTRICT it is reported by Dr. Yeoman that.—“There are 267 licensed cowsheds and milksellers. Not only are the neighbouring urban districts supplied, but also the towns of Birkenhead, Wallasey, and Liverpool. The cowsheds are regularly inspected, and frequent lime washings insisted upon wherever they are required. The shippens vary from the model dwellings of wealthy persons who make farming a hobby, down to primitive sheds where both ventilation and lighting are deficient. During the last ten years there has been a considerable advance in the provision of light and air for the animals, as there is a general recognition of the fact that cows are more profitable when well housed. The arguments used against further improvement in this direction are generally (1) that it is the occupier who is called upon to do the improvement and not the owner, which is unfair, (2) that better housing is not required as the cows are in the open air most of the time. At some of the farms the milking arrangements are of a model kind. No inspector

DAIRIES, COWSHEDS AND MILKSHOPS—SLAUGHTER-HOUSES.

with veterinary knowledge has been appointed to examine the cows."

The following are the rules which are circulated to farmers in Derbyshire and no one can doubt their practical value if honestly carried out. There is really nothing exceptionally difficult or impracticable in them.

1. In the spring and autumn the cowshed should be cleaned, then lime-washed, especially the roof. No other stock, fowls or pigeons must be allowed in.
2. Manure must be removed in the morning after milking, and in the afternoon an hour before milking, when fresh bedding must be put down to keep udders clean.
3. Before milking, udders should be wiped with a clean dry cloth and the teats with a clean damp cloth. The fore milk should be milked on to the floor, as it contains dirt. Milk from an inflamed quarter should be rejected.
4. The milker should wear a clean washable coat and before milking should thoroughly wash his hands in hot water and dry them on a clean towel.
5. The milk in the pails should be kept covered to keep out dirt. Tinned steel pails with lids are best.
6. Whatever the season the milk should be strained and refrigerated at once, then immediately passed through a fine gauze sieve (at least 75 strands to the inch).

N.B.—Nearly all outbreaks of disease attributed to milk are due to its contamination after leaving the cow, therefore:—

- (a) No one suffering from sore throat illness should milk or handle milk.
- (b) Milkers should be trained always to wash their hands before milking.

Slaughter-houses.

The Veterinary Inspector for the Borough of Congleton reports:—"That there are 13 registered slaughter-houses in the district, 11 of which are in constant use: that 12 rounds of inspections were made, and generally they were found in a fairly clean condition, and in some of them great care seemed to have been taken both with regard to cleanliness and the removal of

garbage; that in addition to these visits, requests were received on six occasions for special visits in respect of doubtful carcasses, and two whole carcasses were condemned as unfit for consumption on account of their being tuberculous; that the amount of slaughtering done was approximately—cattle 900, sheep and lambs 3,900, and pigs 2,350, and the quality of the meat was high class in most instances. The frozen meat shops were frequently inspected without anything of an unusual character being found, and the supplies seem to have been carefully regulated and the meat quickly sold, and that on Saturday nights he made frequent visits to the fish stalls in the Market Place, but did not find anything to complain of.”

The Crewe Medical Officer of Health reports:—“There are six registered, five licensed, and two licensed annually, making a total of 13 slaughter-houses in the Borough.

“The registration of two other premises has lapsed and one registered slaughter-house was demolished during 1911.

“All the premises are kept in a fairly satisfactory state and one of them was put into a much better structural condition to meet the requirements of your Committee. Your officials inspected these places systematically.”

ALSAGER URBAN DISTRICT.—“There are three slaughter-houses. These have been inspected regularly and kept in a sanitary condition as far as possible. During the hot summer the fact that offal from slaughter-houses has been kept in covered iron bins and removed as soon as possible must have minimised the spread of diarrhœa and other diseases conveyed to food by flies.”

WINSFORD URBAN DISTRICT.—“Among the 21 slaughter-houses, two in particular are frequently the subject of communications from the Manchester Abattoirs as sending up unsound meat. The butchers say the meat is not intended for food until it has been passed by the Inspector at the Abattoirs. If condemned by him, they acquiesce in its destruction. The technical legal position thus created is a very curious one, and requires a remedy from the highest authority.

“I venture to suggest that every slaughter-house, every owner, every occupier, and every slaughterer, should be separately licensed; with power for the Council (with or without the Justices) to revoke any of such licences at short notice by easy process.

SLAUGHTER-HOUSES—REFUSE REMOVAL AND DISPOSAL.

And that a qualified Veterinary Surgeon should be appointed for the County by the County Council, to assist any local Inspector of Nuisances, on demand by telegraph, in deciding on the condemnation or passing of any meat, dead or alive, found in a butcher's possession; with an additional power to the local Inspector, viz., to detain, pending such inspection by the County Officer, any meat he might suspect, without "seizing" it formally. My belief is that these measures would put an end to the trade in unsound meat, and that nothing less will be effective."

Refuse Removal and Disposal.

This matter receives fairly full comment in the reports received, and I present certain extracts.

A case of considerable importance to Local Authorities who contract for the removal of refuse is that of *Robinson v. Beaconsfield Urban District Council* heard before the Chancery Court and subsequently by the Court of Appeal. In this case the Local Sanitary Authority contracted with a contractor for the cleansing and removal of contents of cesspools in its area, but there were no clauses in the contract as to the disposal of the contents of such cesspools, and no instructions had been given by the Sanitary Authority on this point. The contractor, without the permission of the Sanitary Authority, so deposited the cesspool contents as to give rise to serious nuisance. It was held that the Sanitary Authority were liable for nuisance so occasioned and an injunction was granted against them.

CREWE MUNICIPAL BOROUGH.—"The following figures give the approximate number of the several forms of closet accommodation in the town at the end of the year 1911 :

Water-closets ...	...	...	7,099
Waste Water-closets ...	...	...	1,008
Pail Closets ...	...	...	3,053
Uncovered Privy Middens	}		—
Covered „ „			321
Cesspool Privies ...	...	...	—
Fixed Receptacles ...	...	...	2
Total ...			11,483
Number of houses concerned...			10,378

REFUSE REMOVAL AND DISPOSAL.

“The details of the conveniences reconstructed in 1911 are :

	Dust- bins.	Covered Ashpits	Privy Pails	Water Closets	Waste Water Closets
134 Mixens were converted into ..	39	95	46	88	—
94 Privy Pails were converted into	—	—	—	94	—
Total	39	95	46	182	—

“The approximate number of dustbins, etc., at the end of 1911, was :

Dustbins	...	...	...	7,265
Covered Ashpits	...	...	..	2,639
Uncovered ,,	..	...	...	45

“The scavenging required to deal with the house refuse, trade refuse, the waste paper and the nightsoil is carried out under the superintendence of your Chief Sanitary Inspector.

“The refuse is disposed of on tips at the Corporation Farm and elsewhere.

“It is now many years since the question of a refuse destructor was first considered by this Authority, and I would point out that the need for this method of dealing with house refuse becomes no less with the lapse of time, but rather greater.”

DUKINFIELD MUNICIPAL BOROUGH.—“At present there are four systems of closets, viz. :—ashpit privies, pails, automatic flush closets, and fresh water closets.

The approximate number of each type is appended :—

Ashpit privies	...	...	...	937
Pails	...	...	...	516
Automatic flush closets	...	...	...	1260
Fresh water closets	...	...	...	550

“The accommodation of these several kinds is adequate to meet the requirements of the district.

REFUSE REMOVAL AND DISPOSAL.

"The Committee is gradually reducing the number of ashpit privies by conversions on to the water carriage system either by means of the automatic flush or fresh water.

"The number so dealt with during 1911, is as follows :—

Number of houses dealt with	...	...	107
,, fresh water closets erected	...		58
,, slop	,,	,,	47
,, ashpit privies dispensed with			42

"The fresh water closets include 10 erected under the Factory and Workshops Act. Two cesspools were dispensed with."

HYDE MUNICIPAL BOROUGH.—"Four privies have been converted to water closets during the year, viz. :—186 to 192 Mottram Road.

"Four privies have been converted to pail closets, viz. :—

"Hyde Hall	.....	2 closets
"Clough Fold	.....	1 ,,
"Lofty Top	.....	1 ,,

"There are approximately 6888 closets on the water carriage system, and 93 pail closets and 154 privies in the Borough."

STALYBRIDGE MUNICIPAL BOROUGH.—"Since October 1st, 1907, the Sanitary Department has had entire control over the removal and disposal of all midden and house refuse in the Borough, which, with the exception of that from the Carrbrook and Hey Heads districts, is now conveyed to the town's destructor at the "Flatts."

"The Refuse Destructor, erected by Heenan and Froude, of Manchester, is a five-cell furnace of the 'Heenan' Patent Top Feed type, and is furnished with all the latest improvements.

"The plant is shut down about every six weeks for a few days to allow of the cleaning of the combustion chamber, the flues, the superheater, etc.

"The clinker from the furnaces is of excellent quality and a great quantity of it has been utilised for the percolating beds at the Sewage Works at Bradley Hurst."

REFUSE REMOVAL AND DISPOSAL.

CHEADLE AND GATLEY URBAN DISTRICT.—The Inspector reports:—"At the beginning of July I was informed by occupiers of houses not very far distant from one of the refuse tips that they had seen a few crickets in the houses. I visited and made an inspection and saw a few in the insect powder which had been laid near to the skirting boards in the living room. I then made a thorough examination of the refuse tip and found it to be infested with crickets. Never having had any experience in the destruction of these insects I made enquiries from several of the adjoining Authorities as to their experience in dealing with them. They did not appear to have ever had anything of the kind at any of their tips, or if they had they had not taken any action as to destroying them. I made a strong solution of carbolic acid and saturated the surface of the tip with it, but it did not appear to have any effect on them. I then tried spraying the surface with paraffin oil and set fire to it. After it had burned itself out I again had the surface turned up and found that this did not have the desired effect. I then had the whole of the cover on the tip collected together and burned, and also had the land surrounding the tip of a width of some yards stripped and covered with gas lime. This appeared to confine them to the tip. On stripping I found that the insects did not burrow into the ground more than a depth of three or four inches, and I also found that paraffin oil itself had very poisonous effects on them; immediately the paraffin oil touched them it destroyed them. I then had the whole of the surface of the tip turned over to a depth of six inches, and as it was turned over saturated with paraffin. After this had been done the whole of the surface was covered with quicklime and slacked as it lay. At the end of August all the insects on the tip had been destroyed. I have since then kept this tip under close observation, but have not seen or heard of any."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"Scavenging is carried out by a contractor, who undertakes to empty ashpits and dust-bins in covered carts in a systematic way. When work of this description is let by tender it is almost always found that house refuse is allowed to collect for a longer period than is judicious in relation to the health of the house-holders. All sanitarians agree that large collections of house refuse in the neighbourhood of dwellings are detrimental to health, and I would ask your Council to consider whether the time has not arrived to abolish the contract system and to employ their own workmen and carts to keep the refuse receptacles in an empty state. The latter plan has now been adopted by most of the districts in North-West Cheshire, and has been found to work advantageously. The disposal of refuse is by tips on agricultural land,

REFUSE REMOVAL AND DISPOSAL.

and as is to be anticipated in a growing industrial district, complaint of nuisance arises from time to time. Every care is taken to try and prevent the occurrence of cause for complaint; all refuse is covered over with soil when it is deposited by the contractor; and where nuisance has arisen the tips have been changed. As time goes on, and as the district expands, increasing difficulty will be found in obtaining sites for the deposit of refuse."

HALE URBAN DISTRICT.—"The method of scavenging in vogue aims at the removal of refuse without soil pollution, as follows:—A low built lurry laden with air-tight bins is drawn to the various parts of the district. To the rear of the lurry a rubber-tyred trolley is attached. Having arrived at the destination, a bin is placed on the trolley and this is drawn and placed against or near the receptacle to be emptied, and the contents of the latter are emptied direct into the bin. When full, the bins are taken to a tip and emptied there. This method is employed in all privies, pail closets and ashpits, and has proved very satisfactory indeed and inexpensive.

"Owners and occupiers are being encouraged to replace ashpits by bins, and during the year 17 dry ashpits have been abolished and bins substituted. Ashbins are emptied direct into a covered cart.

"The air-tight bins used for the removal of the refuse are from time to time washed out with disinfecting solution, and at other times are dusted with carbolic acid powder, each being done according to requirements.

"Privy ashpits are emptied every six weeks, dry ashpits every second month, and bins fortnightly, or more often if required. Any request or complaint is at once further attended to."

HOLLINGWORTH URBAN DISTRICT.—"The scavenging of all premises has hitherto been carried out by the private owners. I understand the Council is now about to undertake the removal of house refuse and the cleansing of earth closets, privies, ashpits, and cesspools. A few of the newer houses are provided with water-closets, and in some cases old houses are now being adapted for that convenience."

Dr. Garstang reports as follows on the "Peat Pail System," which is in operation in Knutsford, Winsford, and Middlewich:—
"As far back as 1897 and 1898 I carefully investigated this

REFUSE REMOVAL AND DISPOSAL.

system of 'dry excrement disposal' at Congleton, where it originated. I was satisfied with it, and among many allusions to it in my Annual Reports. I quote the following from the Biddulph Annual Report for 1898 :—

"The Sanitary Committee also decided, after exhaustive discussion, to adopt the system of excrement-disposal known as the 'Congleton Peat Pail.' I was able to advise them that the experiment had been made at Knutsford with very good results. Some few are being got into use. The pails are made of wood : each contains one-fifth its volume of finely powdered and carefully dried peat-dust, acidulated with 10 per cent. by weight of common sulphuric acid. The pails are in duplicate, and once a week a clean one is placed in position, and the partly filled one removed. The peat absorbs all moisture as fast as deposited, and the sulphuric acid fixes the ammonia given off by decomposing urine. The pail contents are thus always dry, and almost inodorous (of course if the pail receive fair treatment), and when emptied at the central depôt, are found to have combined together into a kind of humus which forms a valuable manure. For property which is not considered fit for water closets, this system is the best with which I am acquainted."

"To complete the description it only remains to add that the emptied pail is washed at the depôt (disinfected if necessary), and re-charged with peat-dust ; when it is ready for re-issue, I am prepared to stand to day by the opinion expressed 13 years ago *if the system be carried out as described.*

"The pails have been in use ever since in the Urban Districts of Biddulph, Knutsford, Middlewich and Winsford. Property owners have gone to considerable expense in providing pails, and the Councils have also found the system more expensive than ordinary scavenging, because of the necessity of providing for the additional carting, cleansing, &c.

"In the Knutsford Annual Report, 1910, p. 40, will be found an important reference to the unauthorised departure from the system by the discontinuance of the sulphuric acid, and my condemnation of such retrograde action.

"I am now exceedingly sorry to have to add that, on making further enquiries, I found that the same thing had occurred at

REFUSE REMOVAL AND DISPOSAL.

Biddulph and Winsford, (Middlewich is no longer under my charge), and even at Congleton itself.

“I have been unable to obtain from any of the persons concerned any rational or satisfactory explanation ; and I can therefore only offer that which suggests itself to me. The acid was disliked because of its corrosive action on hands and clothes, so it was quietly dropped. Then it was found too much trouble to pulverise the peat, which was therefore used in lumps. Many other irregularities followed, such as non-removal (and therefore non-cleansing) of such pails as could be emptied into others ; and so the system has broken down and the pails have become a filthy and abominable nuisance. It must be noted that this is not the fault of the system itself, but is entirely due to departure from its rules.

“I have drawn the attention of each Council to the matter, and have advised that either the original rules must be observed in their entirety, or the system abandoned. That there are financial difficulties in either direction is unfortunate, but cannot be helped. My advice is to re-establish the original system as described at the beginning of this article.”

This is a strong and apparently well-founded criticism, and it is hoped that measures will be adopted without delay to revert to the original system and persevere with it in all its details.

RUNCORN URBAN DISTRICT.—“The old system of privy and ashpit is slowly disappearing, and when gone it will not be a day too soon. The Town Planning Act having now come into full operation, the Authority went a step further and adopted a resolution to do away as soon as circumstances will admit of all unconverted privy pits, have them converted into water-closets, and banish the privy pit altogether. This will in time no doubt effect a revolution in the sanitary arrangements of the town.

“The overcrowding of back yards with unauthorised structures should be regarded as a nuisance and put down with a strong hand, as also the accumulation of filth of any kind at people's back doors, passages, or so called warehouses, the dumping of fish offal, vegetable garbage, dirty empty fish boxes, or any other material liable to decompose and become a nuisance. Festerling nuisances of this kind become a danger to health owing to their noisome character, and provide happy hunting and breeding ground for flies when allowed to accumulate. Horse

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middens should be subject to frequent emptyings during the summer months, and on no consideration should the accumulation be allowed to extend over one week. Horse middens are favourite breeding places for flies. All vegetable refuse should be burned. The Authority should insist on their requirements being complied with, and failing compliance offenders should be prosecuted before a Court of Summary Jurisdiction and without mercy. Whenever flies are troublesome, such as in a house, a trial of burned sulphur should be made, pungent fumes are not to their liking."

WILMSLOW URBAN DISTRICT.—"Scavenging is carried out by the occupiers. The Council will do the work if requested and paid by the occupiers or owners, and, under such arrangement, midden-privies are scavenged every one or two months, dry ashpits every month, and dustbins weekly and fortnightly. In my opinion the present system is inadequate, as, when the scavenging is left to the occupiers, it is sometimes not done as frequently and regularly as is necessary, and neglected ashpits are a nuisance and a danger to health.

"The Council does not provide a place where refuse can be tipped. A certain amount is put on land by permission of owners. A lot of tipping used to take place on a conveniently-situated piece of land (Little Lindow). The Council now owns the land, and has forbidden it. People must put their rubbish somewhere, and as they do not wish to carry it any distance, some convenient ditch or unfrequented lane is often used. The pleasant rural district of Morley is now disfigured by collections of old cans, broken crockery, and all kinds of rubbish lying by the roadside. Strawberry Lane is an offence and an eyesore. Continual complaints are heard of this state of things, and a remedy should be found. With a view to bringing Wilmslow into line with other districts and doing away with this nuisance, your Medical Officer has advised for some years that the Council should take up the work of scavenging, and set up a refuse-destroyer."

RUNCORN RURAL DISTRICT.—Dr. J. Adams points out :—
 "That the adoption of public water supplies has revolutionised the sanitary arrangements of your district, so far, at least, as this fact can affect facilities for sewage disposal. The adoption of the various water supplies (5 in number) already described has enabled all townships served by such water supplies to adopt, where possible, the water carriage system of sewage disposal; and in such cases wherein it has not yet been adopted its possibilities still

REFUSE REMOVAL AND DISPOSAL—COMMON LODGING-HOUSES.

remain, subject to ordnance datum or other mechanical inconveniences.

“An active effort has been made by your District Council in those parishes which have sewerage and water mains, to eliminate the objectionable privies with ashpits thereto and cesspools. In this regard I desire to compliment your Council on the very able and efficient work which you have already accomplished. I wish specially to note the results of your services in the parishes of Frodsham, Helsby, Weston and Halton.”

In the TARVIN RURAL DISTRICT Dr. Burton states that :—
“Scavenging is not carried out by the Authority. House refuse such as ashes is carted away by farmers for repairing their gateways, and the scavenging of closets is done by the occupier, the contents being used or buried in the gardens.

“Approximately there are about

“2,000 midden privies

“1,200 dry ashpits (south division only)

“800 pail closets (emptied weekly)

“No record of dustbins

“750 cesspools (south division only)

in this district.

“There are too many midden privies in this district. These ought to be condemned and the pail closet system introduced whenever opportunity offers.

“There is inadequate closet accommodation in some parts of the district; as many as three houses sometimes use the same privy.”

Common Lodging-Houses.

There are only two references of any moment under this heading in the Reports received.

CONGLETON MUNICIPAL BOROUGH.—“There are 4 common lodging-houses registered in accordance with the Public Health Act, with accommodation for 84 persons nightly, and 22,793 were lodged, being an increase of 1,063 on last year. The houses were generally well conducted, kept clean, the sanitary

condition was satisfactory, and they were inspected every week."

CREWE MUNICIPAL BOROUGH.—"There are 7 houses in the town registered as common lodging-houses.

"These are fairly well conducted and kept in accordance with the bye-laws.

"Two houses were removed from the register in 1911, one by cessation of occupation and the other as the result of prosecutions for breaches of the bye-laws. In this latter case there were 4 offenders against the bye-laws, all of which were proved to the satisfaction of the magistrates. They imposed a fine of 5/-, and cancelled the registration certificate.

"Proceedings were taken against one other lodging-house keeper for breach of the bye-laws, and a conviction resulted.

Offensive Trades.

These appear to have received a satisfactory amount of visitation and attention in the several districts. In Crewe Municipal Borough it is stated that—

"For the first time, the business of rag and bone or marine store dealer has been added to the offensive trades in the borough. This was done by the Council on April 5th, 1911, when they made an Order under section 51 of the Public Health Act, 1875, as amended by section 112 of the Public Health Acts Amendment Act, 1907.

"By this Order the following trades are now declared to be offensive:—Blood-drier, Tanner, Leather-dresser, Fat Melter or Fat Extractor, Glue-maker, Size maker, Gut-scrapers, Rag and Bone Dealer, and Hide and Skin and Fat Dealer or Factor."

Sanitary Inspections, &c.

In order to enable one to form a true estimate of the Sanitary Authorities of the several districts in the Administrative County, I drew up a special schedule which almost every official concerned has been kind enough to fill up for me. My thanks are due to those concerned for the trouble they have taken in this matter. The schedule was one on which records were to be entered of:—

COMMON LODGING-HOUSES.

- (a) The number and nature of inspections made ;
- (b) The number of statutory and informal notices served ;
- (c) The result of service of such notices ;

- i.e.* (1) Complied with ;
- (2) Remaining in hand ;
- (3) Prosecutions instituted ;
- (4) „ pending.

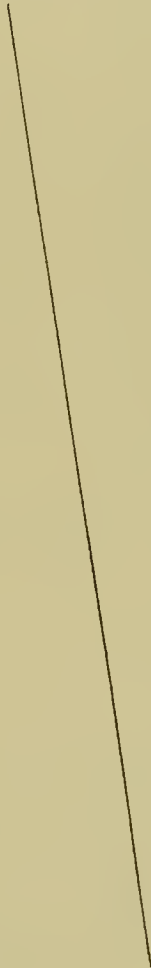
The headings under which these courses of action were to be detailed were as under :—

- 1. Dwelling-Houses (general inspections).
- 2. Cellar Dwellings.
- 3. Back-to-Back Houses.
- 4. Tents, Vans, Sheds, &c.
- 5. Courts, Yards, Passages.
- 6. Privy-Middens, Earth or Pail Closets.
- 7. Cesspools.
- 8. House Drainage.
- 9. Ditches, Watercourses, &c.
- 10. Offensive Accumulations.
- 11. The keeping of Animals (P.H.A., 1875, S. 91 (3)).
- 12. Offensive Trades.
- 13. (a) Slaughterhouses (Public).
- „ (Private).
- (b) Other Places where food is produced or sold.
- 14. Piggeries.
- 15. (a) Dairies.
- (b) Cowsheds.
- (c) Milkshops.
- 16. (a) Factories.
- (b) Workshops.
- (c) Workplaces.
- (d) Outworkers' Premises.
- 17. Bakchouses (Overground).
- „ (Underground).

18. Common Lodging-Houses.
19. Houses let in Lodgings.
20. Smoke Observations.
21. Canal Boats.
22. Infectious Disease Inquiries and Revisits.
23. Miscellaneous.

It will thus be seen that this is merely an elaboration of the recent Local Government Board Order prescribing the duties of Inspectors of Nuisances.

The following table gives the returns supplied by the various districts which have responded to my request :—



COMMON LODGING-HOUSES.

NAME OF DISTRICT.	Total Number of Inspections.	Number of Notices served.		Result of Service of Notices.			
		Statutory.	Informal.	Notice complied with.	Remaining in hand.	Prosecutions.	
						Instituted.	Pending.
MUNICIPAL BOROUGHES.							
Congleton	1239	289	74	349	11		
Crewe	3041	171	918	976	113	11	
Dukinfield	7816	19	97	86	19		
Hyde	2096	437	64	486	15		
Macclesfield	Informati	on not sup	plied in	form re	quired.		
Stalybridge	1464	19	500	449	51	2	
Wallasey	47375	1141	3591	4532	200	11	1
URBAN DISTRICTS.							
Alderley Edge	495	39	27	66		2	
Alsager	745		92	90	2		
Altrincham	Informati	on not sup	plied in	form re	quired.		
Ashton-upon-Mersey	265	6	31	32	5		
Higher Bebington	Informati	on not sup	plied in	form re	quired.		
Lower Bebington	"		"	"			
Bollington	"		"	"			
Bowdon	"		"	"			
Bredbury and Romiley	1267	30	6	28	8	1	6
Bromborough	Informati	on not sup	plied in	form re	quired.		
Buglawton	352	1	15	15	1		1
Cheadle and Gatley	1240	1	21	21	1		
Compstall	192		9	9			
Ellesmere Port & Whitby	Informati	on not sup	plied in	form re	quired.		
Hale	1653	128	299	274	25		
Handforth	72		7	5	2		
Hazel Grove and Bramhall	373	3	50	38	15		
Hollingworth	870	46	2	35			1
Hoole	500		36	36			
Hoylake and West Kirby	Informati	on not sup	plied in	form re	quired.		
Knutsford	652	61	85	121	29		
Lymm	707	65	41	73	35		
Marple							
Middlewich	2024		164	161	3		
Mottram	3309		69	48	21		
Nantwich	1940	29	243	211	32		
Neston and Parkgate	Informati	on not sup	plied in	form re	quired.		
Northwich		86	485	553	20		
Runcorn	Informati	on not sup	plied in	form re	quired.		
Sale		"	5	113	17		
Sandbach	643		125	22			
Tarporley		1	85	119	5	3	
Wilmslow	689	21	103	587	64		
Winsford	1938	265	386	97			
Yeardsley-cum-Whaley	837		97				
RURAL DISTRICTS.							
Bucklow	6080	219	1439	564	70		
Chester			38	38			
Congleton	3915	16	68	69	22		1
Disley	Informati	on not sup	plied in	form re	quired.		
Macclesfield		"	4	1	5		
Malpas			3	446	12		
Nantwich	11463	5	453	462	153		
Northwich	1831	30	585	26	94	1	1
Runcorn	Informati	on not sup	plied in	form re	quired.		
Tarvin			54	35			
Tintwistle	1401	9	129				
Wirral	Informati	on not sup	plied in	form re	quired.		

FACTORY AND WORKSHOPS ACT—CANAL BOATS ACTS—
PUBLIC HEALTH ACTS AMENDMENT ACT.

Factory and Workshops Act, 1901.

It is the duty of every Medical Officer of Health to report specifically every year on the action taken under this Act, and the Chief Inspector of Factories, Sir B. A. Whitelegge, has for some time issued a form indicating the headings under which information is desired. This form is appended to all the Annual Reports received, and a perusal of the contents shows that for the most part the details of the Act have received attention at the hands of Local Sanitary Authorities in the Administrative County. There is nothing at present calling for special mention in this connection.

Canal Boats Acts.

These Acts are only enforced in those Districts where there is a recognised "stopping-place" for canal boats. As these are for purposes of inspection "floating houses," and as the regulations of the Local Government Board concerning them do not err on the side of strictness, it is desirable that inspection should be thorough and the enforcement of necessary remedies prompt and effective. The more important sanitary matters requiring supervision are cleanliness, ventilation, overcrowding, water-supply, provision of double bulk-heads where offensive cargo is carried, the regular removal of bilge-water, and the control of infectious disease. The provisions of the Acts and Regulations appear to have been systematically and properly carried out.

Public Health Acts Amendment Act, 1907.

The following Local Authorities have adopted the above Act in part :—

Crewe M.B.

Stalybridge M.B.

Alderley Edge.

Alsager U.D. (Part III., ss., 39-42).

Ashton-upon-Mersey U.D. (Part I. to VI.)

Lower Bebington U.D.

Bollington U.D.

Bowdon U.D.

Bredbury and Romiley U.D.

PUBLIC HEALTH ACTS AMENDMENT ACT.

Bromborough U.D. (Part III.)

Cheadle and Gatley U.D. (application made) .

Ellesmere Port and Whitby U.D. (Parts II., III.,
IV. and VI.)

Hale U.D.

Hoylake and West Kirby U.D.

Marple U.D.

Middlewich U.D.

Neston and Parkgate U.D.

Runcorn U.D.

Wilmslow U.D.

Bucklow R.D.

Nantwich R.D.

Northwich R.D.

Runcorn R.D.

Recommendations Summarised.

1.—That the Councils of the Municipal Boroughs of Crewe, Congleton, Dukinfield, and Hyde and of the Urban Districts of Altrincham, Ellesmere Port and Whitby, Hoole, Northwich, Runcorn, Sandbach, and Winsford, should be again urged to consider the question of the adoption of the Early Notification of Births Act and the framing of suitable machinery to operate this Act to the best advantage.

2.—That the Local Government Board be invited to consider the framing of Regulations under Section 130 of the Public Health Act, 1875, for the preventive control of Measles and Whooping Cough.

3.—That the Councils of the following districts be urged to consider the desirability of making, either alone or in conjunction with the Councils of adjacent districts, adequate provision for the hospital isolation of cases of Scarlet Fever, Diphtheria and Typhoid Fever :—

Dukinfield Municipal Borough.
Stalybridge Municipal Borough.
Bredbury and Romiley Urban District.
Compstall Urban District.
Handforth Urban District.
Hazel Grove and Bramhall Urban District.
Hollingworth Urban District.
Marple Urban District.
Mottram-in-Longdendale Urban District.
Yeardsley-cum-Whaley Urban District.
Chester Rural District.
Disley Rural District.
Malpas Rural District.
Tarvin Rural District.
Tintwistle Rural District.

RECOMMENDATIONS SUMMARISED.

4.—That the Councils of the following districts be urged to consider the question of making adequate hospital provision for cases of Small-pox :—

Dukinfield Municipal Borough.
 Bredbury and Romiley Urban District.
 Compstall Urban District.
 Handforth Urban District.
 Hazel Grove and Bramhall Urban District.
 Hoole Urban District.
 Marple Urban District.
 Mottram Urban District.
 Tarporley Urban District.
 Yeardsley-cum-Whaley Urban District.
 Chester Rural District.
 Disley Rural District.
 Tarvin Rural District.
 Tintwistle Rural District.

5.—That the Councils of the following districts be urged to consider the steps to be taken to remedy the following conditions which are of a nature likely to be detrimental to the public health of the locality concerned :—

Bollington Urban District.—Adequacy of water supply.
 Compstall Urban District.—Sewerage and sewage disposal.
 Handforth Urban District.—Sewerage and sewage disposal.
 Northwich Urban District.—The provision of houses for the working classes.
 Wilmslow Urban District.—The making of more satisfactory arrangements for scavenging and refuse disposal.
 Chester Rural District.—Sewerage and sewage disposal at Great Saughall and Mickle Trafford ; water supply at Dunham-on-the-hill and Ince.
 Congleton Rural District.—Water supply to Mow Cop and Mount Pleasant.
 Nantwich Rural District.—Water supply at Audlem ; sewerage and sewage disposal at Haslington, Crewe

RECOMMENDATIONS SUMMARISED.

Green and Winterley, and at London Road and Crewe Road, Willaston.

Northwich Rural District.—The provision of houses for the working classes ; sewerage of Lostoek Green ; extension and modification of sewage disposal works at Hartford.

Tarvin Rural District.—Water supply of Farndon and Kelsall ; sewerage and sewage disposal at Farndon, Churton and Tattenhall.

Wirral Rural District.—The sewerage of Newton-by-Larton ; the extension or modification of the sewage disposal plant at Eastham.

6.—That it be represented to the Local Government Board that there is considerable waste of public money taking place in connection with the free distribution of disinfectants, and that Local Sanitary Authorities would be glad of some authoritative pronouncement in the shape of a Memorandum or otherwise as to the reliability of various types of disinfectant, and the circumstances which should regulate their use, and, in particular, the circumstances under which free distribution to the public should be undertaken by Sanitary Authorities.

7.—That your Committee, at some early date, consider, in conjunction with the Education Committee, the question of providing me with a motor car, or of such an allowance for travelling expenses as will permit of my keeping one, in order to lessen as far as practicable the present enormous waste of time involved in getting from place to place in the county.

MEREDITH YOUNG, M.D., D.P.H.,

County Medical Officer of Health.

Administrative County of Chester.

APPENDIX OF STATISTICS

FOR 1911.

TABLE I.—Population, Area, Births, Deaths, &c.—

Showing enumerated and estimated population, area, persons per acre, births and deaths, birth-rates, and death-rates, proportion of deaths of infants to births, deaths from seven principal zymotic diseases, and corresponding death-rates.

TABLE II.—Mortality—

Showing deaths from certain causes, classified according to Diseases, Ages, and Localities.

TABLE III.—Infectious Disease—

Showing new cases notified and new cases removed to Hospital classified according to Diseases and Localities, and giving particulars as to Isolation Hospital provision.

NOTE.—The information in these Tables is derived from the returns made by the District Medical Officers of Health on Forms supplied to them by the Local Government Board. The proportion of persons per acre, the deaths from the seven principal zymotic diseases, and corresponding death rates have been added. The population in 1911, and the areas, are from the Preliminary Report of the Census.

TABLE II.—MORTALITY.

Showing deaths from subjoined causes during the year ending December 31st, 1911, classified according to Diseases and Localities.

DISEASES.	Enteric Fever.	Small-pox.	Measles.	Scarlet Fever.	Whooping cough.	Diphtheria and Croup.	Influenza.	Erysipelas.	Cerebro Spinal Fever.	Phthisis.	Tuberculous Meningitis.	Other Tubercular Diseases.	Rheumatic Fever.	Gout, Malignant Disease.	Brucellosis.	Brucella Pneumonia.	Pneumonia.	Other Diseases of Respiratory Organs.	Diarrhea and Enteritis.	Appendicitis and Typhilitis.	Alcoholism.	Cirrhosis of Liver.	Nephritis and Bright's Disease.	Periparturient Fever.	Other Accidents and Diseases of Pregnancy.	Constitutional Debility and Malformation.	Violent Deaths.	Suicides.		
SANITARY DISTRICTS																														
Municipal Boroughs.																														
Congleton .....	...	...	...	1	1	3	1	...	...	12	2	2	...	16	9	7	3	...	20	1	1	1	5	...	1	16	6	3
Crewe	1	4	7	7	5	3	3	...	...	34	7	16	1	38	34	30	17	9	85	...	1	2	8	...	3	48	18	5
Dukinfield	1	23	...	1	6	...	...	...	...	31	8	5	2	18	26	18	15	...	54	...	...	3	7	...	5	24	6	...
Hyde	5	13	...	...	9	4	2	...	...	46	5	5	2	31	48	31	34	6	52	3	1	4	21	1	1	52	17	10
Macclesfield	2	...	0	4	12	1	2	...	...	41	2	10	1	41	33	14	14	6	44	4	1	5	27	1	3	27	11	4
Stalybridge	7	39	1	3	1	2	2	...	...	37	6	7	2	24	55	14	28	5	41	4	...	3	10	...	3	21	16	5
Wallasey	1	1	5	2	5	16	9	1	...	81	11	21	...	86	61	27	64	4	75	10	3	...	25	...	5	67	24	5		
	17	1	84	15	29	41	21	8	...	282	41	66	8	257	263	142	175	30	371	22	7	18	103	2	21	255	98	32		
Other Urban Districts.																														
Alderley Edge.....	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	...	...	...	2	1	...	...	...	...	...	1	1	...
Alsager .....	...	...	...	1	...	...	...	...	...	2	1	1	...	5	...	1	...	...	...	...	2	...	...	...	...	3	...	1
Altrincham	2	5	...	6	1	3	...	...	...	21	3	3	2	26	24	5	16	7	25	...	2	1	8	...	1	21	4	3
As ton-upon-Mersey ..	...	1	...	1	1	1	...	...	...	9	3	1	1	11	4	...	3	...	6	1	...	11	3	...	1	6	1	2
Higher Bebington .....	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	1	...	1	...	...	...	...	...	...	1	1	...
Lower Bebington	1	4	1	3	5	...	...	...	...	6	3	3	...	9	4	3	6	2	9	2	4	...	2	...	10	3	...	
Bollington.....	...	2	...	...	...	...	...	...	...	2	2	2	1	2	5	...	...	1	5	...	...	...	1	...	1	4	4	1
Bowdon .....	...	...	...	...	...	...	...	...	...	1	1	...	...	7	2	1	3	...	2	...	...	...	1	...	...	7	2	2
Bredbury and Romiley .....	...	6	...	1	...	...	...	...	...	9	6	3	3	6	10	4	5	...	3	...	...	...	1	2	...	2	1	...
Bromborough .....	...	...	...	...	...	...	...	...	...	4	...	1	...	2	1	...	...	...	3	...	...	...	...	...	...	2	...	...
Englawton .....	...	...	...	1	1	...	...	...	...	1	1	1	...	1	2	...	1	...	2	...	...	1	1	...	...	2	...	...
Cheadle and Gatley .....	...	...	1	...	4	...	...	...	...	8	2	2	...	11	8	...	3	...	11	...	...	1	5	...	1	1	2	2
Compstall .....	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Ellesmere Port and Whitby	1	15	...	...	1	...	...	...	...	5	2	5	1	3	13	4	5	1	17	...	...	1	2	1	...	24	7	1
Hale .....	...	...	...	3	...	1	...	...	...	4	...	2	1	...	9	2	3	...	5	1	...	1	3	...	...	3	...	...
Handforth .....	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	2	...	...
Hazel Grove and Brainhall	1	1	...	...	...	...	...	...	...	20	2	6	...	12	11	9	5	...	9	2	...	1	9	...	1	9	4	1
Hollingsworth .....	...	...	...	...	...	...	...	...	...	3	2	...	...	2	2	...	1	3	2	...	...	...	...	...	2	7	1	...
Hoole .....	...	...	...	2	...	...	...	...	...	3	...	...	...	4	8	1	3	1	1	...	1	...	1	...	1	3	2	1
Hoylake and West Kirby.....	...	3	3	2	...	1	1	...	...	10	2	3	...	18	7	2	9	2	12	1	...	1	4	...	...	6	...	1
Knutsford	1	...	...	5	...	...	...	...	...	2	1	1	...	5	3	...	6	1	4	...	2	...	3	...	...	...	...	...
Lymm .....	...	...	...	...	1	1	...	...	...	7	1	3	1	8	4	...	1	...	2	...	...	...	...	...	...	1	...	...
Marple .....	...	2	...	1	...	...	...	...	...	8	...	1	1	6	10	1	1	1	4	...	1	1	...	...	...	4	...	...
Middlewich .....	...	...	...	4	...	...	...	...	...	3	1	3	...	3	1	...	5	...	8	...	...	1	...	...	...	6	3	...
Mottram	1	1	...	...	...	...	...	...	...	1	...	...	...	2	3	...	1	2	4	1	...	...	1	...	...	...	...	...
Nantwich .....	...	1	...	2	...	1	...	...	...	4	1	2	...	9	6	4	6	1	7	1	...	...	1	...	3	11	...	...
Neston and Parkgate .....	...	...	...	4	...	...	...	...	...	6	1	1	...	2	1	7	1	...	5	...	2	1	...	...	...	5	1	2
Northwich	4	...	8	23	...	...	...	...	...	17	3	8	1	14	12	10	13	2	41	6	...	2	3	...	...	12	8	1
Runcorn .....	...	...	...	2	1	1	...	...	...	11	7	12	2	9	24	...	21	...	41	...	...	...	10	...	3	22	11	...
Sale .....	...	5	...	1	1	...	...	...	...	21	1	...	...	14	16	2	14	...	24	2	...	1	5	1	2	14	3	1
Sandbach .....	...	...	4	...	...	1	...	...	...	7	...	5	...	4	3	1	3	...	6	1	...	...	1	...	...	9	5	...
Tarporley .....	...	...	...	...	2	...	...	...	...	4	1	...	...	2	2	...	3	...	3	...	...	...	2	...	...	4	2	...
Wilmslow .....	...	1	...	1	1	...	...	...	...	7	...	1	...	6	9	...	5	1	4	...	...	...	7	...	...	3	4	2
Winsford .....	...	...	...	1	...	...	...	...	...	4	...	3	...	12	...	...	...	...	14	...	...	...	2	1	3	16	4	1
Yearley-cum-Whaley .....	...	...	...	...	...	...	...	...	...	2	...	1	...	3	...	...	3	...	...	...	...	...	2	...	...	2	1	...
	11	55	10	68	19	10	1	...	...	213	48	75	15	229	206	77	118	25	263	20	8	28	79	6	18	221	78	22
Rural Districts.																														
Bucklow .....	...	...	1	...	7	1	...	...	...	12	3	1	...	29	16	10	12	1	16	1	1	2	7	2	...	16	10	...
Chester .....	...	...	1	...	3	2	...	...	...	5	1	2	...	10	8	...	6	2	10	...	...	4	4	...	1	9	7	1
Congleton .....	...	2	...	2	10	1	...	...	...	3	1	3	1	17	3	5	7	...	7	2	...	4	4	...	1	8	2	1
Disley .....	...	1	...	1	...	...	...	...	...	2	...	1	...	4	2	...	1	...	1	...	...	1	...	...	...	1	1	...
Macclesfield .....	...	...	...	2	...	3	...	...	...	9	...	1	2	8	10	2	13	1	3	4	...	3	7	...	4	7	6	6
Malpas .....	...	...	...	1	...	...	...	...	...	...	...	...	...	6	1	1	1	...	1	...	...	...	1	...	...	3	1	1
Nantwich	1	...	...	2	3	6	1	...	...	16	2	7	2	24	17	2	9	1	19	...	1	3	2	1	3	16	12	2
Northwich	2	...	6	...	16	...	1	...	...	11	2	9	...	20	14	9	11	2	19	3	1	3	10	...	2	22	14	1
Runcorn	2	...	3	...	5	2	...	1	...	18	2	5	...	19	22	7	20	4	27	4	...	...	...	3	4	19	15	5
Tarvin	1	...	...	1	5	4	...	...	...	6	...	1	...	13	14	2	9	1	10	2	1	...	5	2	3	5	2	2
Tintwistle .....	...	...	...	...	2	...	...	...	...	...	...	1	...	2	4	1	...	...	1	...	...	...	3	...	...	...	1	1
Wirral	2	1	1	1	2	10	1	3	23	11	7	11	3	11	...	4	...	1	...	1	8	7	4	
	8	...	14	4	45	28	7	2	...	94	11	32	8	175	122	46	90	15	125	16	8	16	44	8	19	114	78	24		
Administrative County.	36	1	153	29	142	88	38	11	...	580	100	173	31	661	594	245	423	70	719	58	23	62	226	16	58	590	254	78		



TABLE III.—INFECTIOUS DISEASE.

Showing cases notified and cases removed to Hospital during the year ending December 31st, 1911, classified according to Diseases and Localities, and giving particulars as to Isolation Hospital Provision.

SANITARY DISTRICTS.	Number of cases notified in each District.										Number of cases removed to Hospital from each District.										Is Hospital Isolation provided?				
	Small-pox.	Cholera.	Diphtheria including Membranous Group.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Continued Fever.	Puerperal Fever.	Phthisis.	TOTAL.	Small-pox.	Cholera.	Diphtheria including Membranous Group.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Relapsing Fever.	Continued Fever.		Puerperal Fever.	Phthisis.	TOTAL.	
Municipal Boroughs.																									
Congleton	1		20	3	56		6		1		87	1		7		17		4						29	Yes. West Heath Joint.
Crewe			86	30	268		5		2	11	402			76	4	232		3			2	3	320		Yes. Crewe
Dukinfield	4		22	19	26		10			15	96	4				1							5		Yes. Hyde.
Hyde	1		27	35	31		10		4	16	124	1		12	1	26		6					46		Yes. Ditto.
Macclesfield			14	25	258		24		6	21	348			5		183		21					214		Yes. Macclesfield.
Stalybridge	14		7	9	34		20		1	31	116	14					7					21		Small-pox only, Joint Board's, Hartshead.	
Wallasey	10		62	42	286		24		3	71	498	10		46		189		13				15	273		Yes. Wallasey.
	30		238	163	959		99		17	165	1671	30		146	5	653		54			2	18	908		
Other Urban Districts.																									
Alderley Edge			1		1						2														Yes. Bucklow Joint and Baguley.
Alsager				1	51						52														Yes. West Heath Joint.
Altrincham			5	16	33		24		3	13	94			3		30		24			1		58		Yes. Altrincham.
Ashton-upon-Mersey			5	2	18				1	6	32					7						6	13		Yes. Baguley.
Higher Bebington			6	2	12				1	1	22			4		10					1	1	16		Yes. Wirral Joint.
Lower Bebington	3		14	15	32		5			2	71	3		10	4	27		4				2	50		Yes. Ditto.
Bollington			2		2					1	5			1								1			Yes. Macclesfield.
Bowdon				1	5						6					3							3		Yes. Baguley.
Bredbury and Romiley			12	12	18				3	2	47			3		11							14		Yes. Hyde.
Bromborough			4	2	8		1			2	17			4	8							2	14		Yes. Wirral Joint and Pool Works Village.
Buglawton			8		7		1				16			1		5		1					7		Yes. West Heath Joint.
Cheadle and Gatley			31	8	21		2		1	6	69			10	5	6		1					22		Yes. Baguley.
Compstall																									Yes. Hyde.
Ellesmere Port and Whithy			4	1	24		8		1	23	61			1		16		6			1	23	47		Yes. Wirral Joint.
Hale			5	1	17					3	26			3		8							11		Yes. Baguley and Mossall.
Handforth			3		2						5														No.
Hazel Grove and Bramhall			2		8		6			4	20														Yes. Hyde.
Hollingworth				2			1			3	6														Small-pox only, Mottram Moor.
Hoole			5	4	19		2		2	3	35				5	10		1					16		Yes. Chester.
Hoylake and West Kirby			13	8	155		1			2	179			7		141						2	150		Yes. Wirral Joint.
Knutsford					20		8		1	4	33					18		8				1	27		Yes. Baguley.
Lymm			2	6	7					2	17					3							3		Yes. Ditto.
Marple				3	5	1					9														Yes. Hyde.
Middlewich			6	5	6				2	1	23														Yes. Davenham and Marbury.
Mottram							1				1														Yes. Mottram Moor.
Nantwich			7	5	84					2	98			1		65							66		Yes. Alveston Joint.
Neston and Parkgate			14	1	3				1	7	26			5		2		1				7	15		Yes. Wirral Joint.
Northwich			20	13	11		21			1	6	72			7		1	17					25		Yes. Leftwich.
Runcorn			37	14	15		21	4	4		95							14					14		Yes. Runcorn.
Sale			7	6	59			4	1	8	85			2		21							23		Yes. Baguley and Mossall.
Sandbach			11	1	57						69			9		35							44		Yes. West Heath Joint, Arelid for Small-pox.
Tarporley			6								6														Yes. Chester.
Wilmelaw			3	2	7				2	4	18			2		5					1		8		Yes. Baguley and Mossall.
Winsford			9	13	14		4		1	4	45			6		12		4					22		Yes. Davenham and Marbury.
Yeardsley-cum-Whaley																									Hyde and Hyde Peak.
	3		242	144	721	1	106	8	25	109	1359	3		79	22	436		81			4	44	669		
Rural Districts.																									
Bucklow			13	17	70		19		2	9	130			5	4	62		19					90		Yes. Hospital at Baguley.
Chester			5	1	43		2				51														Yes. Chester.
Congleton	1		71	10	118		2			5	207	1		51		71		1					124		Yes. West Heath Joint.
Disley			1	3	3		2			1	10														Yes. Hyde.
Macclesfield			22	4	43		1				70			5		25		1					31		Yes. Macclesfield and Higher Sutton for Small-pox.
Malpas				1							1														Yes. Chester.
Nantwich			97	16	164		6		2	2	287			54		89		4					147		Yes. Nantwich Joint and Small-pox.
Northwich			26	9	36		5		2	4	82			8		10		11					29		Yes. Northwich Joint and Leftwich.
Runcorn			61	19	72		6		1		159			22		41		2					65		Yes. Dutton. Moore (Small-pox).
Tarvin			15	1	48		1		1	1	67														Yes. Chester.
Tintwistle			3	1	3						7														Yes. Mottram Moor.
Wirral			5	2	36		2		1	5	51			4	1	21						5	31		Yes. Wirral Joint.
	1		319	84	636		46		9	27	1122	1		149	5	319		38				5	517		
Administrative County	34		799	391	2316	1	251	8	51	301	4152	34		374	32	1408		13			6	67	2094		

TABLE III.—INFECTIOUS DISEASE.

Showing cases notified and cases removed to Hospital during the year ending December 31st, 1911, classified according to Diseases and Localities, and giving particulars as to Isolation Hospital Provision.

SANTARY DISTRICTS.	Number of cases notified in each District.										Number of cases removed to Hospital from each District.										Is Hospital Isolation provided?			
	Small-pox.	Cholera.	Diphtheria including Membraneous Group.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Continued Fever.	Puerperal Fever.	Phthisis.	TOTAL.	Small-pox.	Cholera.	Diphtheria including Membraneous Group.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Relapsing Fever.	Continued Fever.		Puerperal Fever.	Phthisis.	TOTAL.
Municipal Boroughs.																								
Congleton	1	...	20	3	56	...	6	...	1	...	67	1	...	7	...	17	...	4	...	...	...	...	29	Yes. West Heath Joint.
Crewe	86	30	268	...	5	...	2	11	402	...	...	76	4	232	...	3	...	...	2	3	320	Yes. Crewe
Dukinfield	4	...	22	19	26	...	10	...	...	15	96	4	...	...	...	1	...	...	...	...	...	...	5	Yes. Hyde.
Hyde	1	...	27	35	31	...	10	...	4	16	124	1	...	12	1	26	...	6	...	...	...	...	46	Yes. Ditto.
Macclesfield	14	25	238	...	24	...	6	21	348	...	...	5	...	188	...	21	...	...	...	...	214	Yes. Macclesfield.
Stalybridge	14	...	7	9	34	...	20	...	1	31	116	14	...	...	...	...	7	...	...	...	...	21	Small-pox only, Joint Board's, Hartshead.	
Wallasey	10	...	62	42	286	...	24	...	3	71	498	10	...	46	...	189	...	13	...	...	...	15	273	Yes. Wallasey.
	30	...	238	163	959	...	99	...	17	165	1671	30	...	146	5	653	...	54	...	...	2	18	908	
Other Urban Districts.																								
Alderley Edge	1	...	1	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Bucklow Joint and Baguley.
Alsager	1	51	...	...	...	...	...	52	...	...	...	...	...	...	...	...	...	...	...	...	Yes. West Heath Joint.
Altrincham	5	16	33	...	24	...	3	13	94	...	...	3	...	30	...	24	...	...	1	...	58	Yes. Altrincham.
Ashton-upon-Mersey	5	2	18	...	...	...	1	6	32	...	...	...	...	7	...	...	...	...	...	6	13	Yes. Baguley.
Higher Bebington	6	2	12	...	...	...	1	1	22	...	...	4	...	10	...	...	...	...	1	1	16	Yes. Wirral Joint.
Lower Bebington	3	...	14	15	32	...	5	...	...	2	71	3	...	10	4	27	...	4	...	...	...	2	50	Yes. Ditto.
Bollington	2	...	2	...	...	...	...	1	5	...	...	1	...	...	...	...	...	...	...	...	1	Yes. Macclesfield.
Bowdon	1	5	...	...	...	...	...	6	...	...	...	...	3	...	...	...	...	...	...	3	Yes. Baguley.
Bredbury and Romley	12	12	18	...	...	...	3	2	47	...	...	...	...	11	...	...	...	...	...	...	14	Yes. Hyde.
Bromborough	4	2	8	...	1	...	...	2	17	...	...	4	8	...	...	...	...	...	...	2	14	Yes. Wirral Joint and Pool Works Village.
Buglawton	8	...	7	...	1	...	...	...	16	...	...	1	...	5	...	1	...	...	...	...	7	Yes. West Heath Joint.
Cheadle and Gatley	31	8	21	...	2	...	1	6	69	...	...	10	5	6	...	1	...	...	...	...	22	Yes. Baguley.
Compstall	Yes. Hyde.
Ellesmere Port and Whitby	4	1	24	...	8	...	1	23	61	...	...	1	...	16	...	6	...	...	1	23	47	Yes. Wirral Joint.
Hale	5	1	17	...	...	...	...	3	26	...	...	3	...	8	...	...	...	...	...	...	11	Yes. Baguley and Mossall.
Handforth	3	...	2	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	No.
Hazel Grove and Bramhall	2	...	8	...	6	...	...	4	20	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Hyde.
Hollingworth	2	...	...	1	...	...	3	6	...	...	...	...	...	...	...	...	...	...	...	...	Small-pox only, Mottram Moor.
Hoole	5	4	19	...	2	...	2	3	35	...	...	...	5	10	...	1	...	...	...	...	16	Yes. Chester.
Hoylake and West Kirby	13	8	155	...	1	...	...	2	179	...	...	7	...	141	...	...	...	...	2	150	Yes. Wirral Joint.	
Knutsford	20	...	8	...	1	4	33	...	...	...	...	18	...	8	...	...	...	1	27	Yes. Baguley.
Lymm	2	6	7	...	...	...	...	2	17	...	...	...	...	3	...	...	...	...	...	...	3	Yes. Ditto.
Marple	3	5	1	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Hyde.
Middlewich	6	5	6	...	...	...	2	1	20	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Davenham and Marbury.
Mottram	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Mottram Moor.
Nantwich	7	5	84	...	...	...	...	2	98	...	...	1	...	65	...	...	...	...	...	...	66	Yes. Alvaston Joint.
Neston and Parkgate	14	1	3	...	...	...	1	7	26	...	...	5	...	2	...	1	...	...	...	7	15	Yes. Wirral Joint.
Northwich	20	13	11	...	21	...	1	6	72	...	...	7	...	1	...	17	...	...	...	...	25	Yes. Leftwich.
Runcorn	37	14	15	...	21	4	4	...	95	...	...	...	...	...	...	14	...	...	...	...	14	Yes. Runcorn.
Sale	7	6	59	...	...	4	1	8	85	...	...	2	...	21	...	...	...	...	...	...	23	Yes. Baguley and Mossall.
Sandbach	11	1	57	...	...	...	...	...	69	...	...	9	...	35	...	...	...	...	...	...	44	Yes. West Heath Joint, Archid for Small-pox.
Tarporley	6	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Chester.
Wilmslow	3	2	7	...	...	...	2	4	18	...	...	2	...	5	...	...	...	...	1	...	8	Yes. Baguley and Mossall.
Winsford	9	13	14	...	4	...	1	4	45	...	...	6	...	12	...	4	...	...	...	...	22	Yes. Davenham and Marbury.
Yeardsley-cum-Whaley	Hyde and Hyde Peak.
	3	...	242	144	721	1	106	8	25	109	1359	3	...	79	22	436	...	81	...	...	4	44	669	
Rural Districts.																								
Bucklow	13	17	70	...	19	...	2	9	130	...	...	5	4	62	...	19	...	...	...	...	90	Yes. Hospital at Baguley.
Chester	5	1	43	...	2	...	...	...	51	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Chester.
Congleton	1	...	71	10	118	...	2	...	...	5	207	1	...	51	...	71	...	1	...	...	...	...	124	Yes. West Heath Joint.
Disley	1	3	3	...	2	...	...	1	10	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Hyde.
Macclesfield	22	4	43	...	1	...	...	...	70	...	...	5	...	25	...	1	...	...	...	...	31	Yes. Macclesfield and Higher Sutton for Small-pox.
Malpas	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Chester.
Nantwich	97	16	164	...	6	...	2	2	287	...	...	54	...	89	...	4	...	...	...	...	147	Yes. Nantwich Joint and Small-pox.
Northwich	26	9	36	...	5	...	2	4	82	...	...	8	...	10	...	11	...	...	...	...	29	Yes. Northwich Joint and Leftwich.
Runcorn	61	19	72	...	6	...	1	...	159	...	...	22	...	41	...	2	...	...	...	...	65	Yes. Dutton. Moore (Small-pox).
Tarvin	15	1	48	...	1	...	1	1	67	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Chester.
Tintwistle	3	1	3	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	Yes. Mottram Moor.
Wirral	5	2	36	...	2	...	1	5	51	...	...	4	1	21	...	...	...	...	...	5	31	Yes. Wirral Joint.
	1	...	319	84	636	...	46	...	9	27	1122	1	...	149	5	319	...	38	...	...	...	5	517	
Administrative County	34	...	799	391	2316	1	251	8	51	301	4152	34	...	374	32	1408	...	173	...	...	6	67	2094	



